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Pepperdine University
Graduate School of Education and Psychology

VIRTUAL CIVIC ENGAGEMENT:
EXPLORING TECHNOLOGY, SECONDARY SOCIAL STUDIES, AND
PROBLEM BASED LEARNING WITH TPACK

A dissertation submitted in partial satisfaction
of the requirements for the degree of
Doctor of Education, Learning Technologies/Educational Technologies

by

Brett Schneider

April, 2017

Linda Polin, Ph.D.- Dissertation Chairperson

This dissertation, written by

Brett Schneider

under the guidance of a Faculty Committee and approved by its members, has been submitted to be accepted by the Graduate Faculty in partial fulfillment of the requirements and degree of

DOCTOR OF EDUCATION

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DEDICATION

This work is dedicated to the visionary educational leaders who have inspired me to rethink what classroom teaching means: Paulo Freire, Deborah Meier, TheodoreSizer, Maria Montessori, and John Dewey. This work is also dedicated to my students past, present, and future, who have taught me much more about teaching and learning than I could have learned in any academic institution.

ACKNOWLEDGEMENTS

I would like to thank the administration, teachers, parents, and students of the Institute for Collaborative Education as an eye-opening community whose open-mindedness and caring always lend toward student learning and innovation. I would like to thank a range of teachers of history teachers whom I worked, taught, laughed, collaborated, and discoursed in ways that increased my understandings and heightened my reflections: David Dash, Angela Matthews, Jenna Prada, and Josh Torpey.

I would like to thank my dissertation committee of Dr. Linda Polin, Dr. Jack McManus, and Dr. Paul Sparks. As a group, you bring together such a wealth of knowledge and such good questions regarding the relevance of technology to the teachers and students of America's classrooms. It was truly a joy to experience the thought-provoking nature of your classrooms and the provocative questioning of your service on this dissertation committee. I thank Dr. Jack McManus for providing a critical objective voice during external challenge at the beginning of this academic road and a welcoming beacon at the end.

I would particularly like to thank Dr. Linda Polin, whose cultural awareness, keen mind, and visionary educational leadership drew me to Pepperdine University in the first place. As a dissertation chair, you have offered intellectual challenges and demands for me to reflect thoughtfully. It is through working with you that I have learned a deeper level of diligence, commitment, and self-respect as an academic.

I would like to thank Eve Demian for long-term inspiration, cheerleading, and friendship.

I would like to thank Valerie Coleman-Palansky for the supply of positive attitude and affirmation during the final phases of the dissertation writing.

I would like to thank the faculty of Bronx Collaborative for providing rich interactive dialogues post-research that helped me see myriad ways in which this research can connect to ongoing teacher coaching and work with students.

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ABSTRACT

Sociological and cultural analysts have noted the reticence of public secondary schooling to recognize and build academic activities around the participatory culture in which adolescents are so readily involved (Jenkins, Purushotma, Weigel, Clinton & Robison, 2009). Despite the Common Core State Standards having required students to demonstrate they can maximize technology to perform a range of skills involving targeted specialized research, organized writing, and visually intentional presentation (National Governors Association Center for Best Practices [NGA], Council of Chief State School Officers [CCSSO], 2010), very few classrooms have followed through.

The avoidance and or failure of these educational technology integrations in secondary subject content classes raised questions. A survey of the literature showcases the many ways in which technologies were not fully matched to the tasks, expectations, or teacher skills. The mystery of epic technological classroom can be resolved if we apply the lens of Technology, Pedagogy, and Content Knowledge (Shulman, 1986; Mishra & Koehler, 2006) which speaks about the interactions and alignment tensions among these three areas.

When one has applied this TPACK lens we can best understand a range of surveyed literature that speaks to disconnect among technology affordances, teacher pedagogies, and requirements of content knowledge. Among a range of TPACK research emerges a sub-set that advocates for the value of cognitive scaffolding through *hard scaffolds* and *soft scaffolds* (Saye & Brush, 2002). Previous research has suggested the hard scaffolds can offer a built pedagogy filled with student project expectations and that soft scaffolds can provide specific practices support that is customized and relevant for participants.

This research study engages in design-based research to refine hard and soft scaffolds to support high school social studies students through a multi-phase oral history project. Engaging 2 sections of students at a progressive public high school, the researcher engaged in a two-iteration cycle of design activities between November 2014 and March 2015. A student work digital portfolio was turned in after students used the first iteration scaffolds. After a teacher-provided analysis of student work using the researchers provided rubric, tweaks were made to the scaffolds. A post-interview with participant teachers provided further refinement.

Chapter 1: What's with Teens, School & Civic Participation Today?

Adolescents' 21st Century Role in the World

In cyberspace, knowledge can no longer be considered to be something abstract and transcendental. It is all the more visible— and even tangible in real time— in that it is communicated by actual people....contrary to all the rhetoric about the so-called 'coldness' of cyberspace, interactive digital networks are instrumental in bringing knowledge down to the personal plane and making it more tangible. (Lévy, 1997, p. 254)

Adolescents & civic participation: Changing standards. More and more young people are being credited as utilizing new media to engage in civic participation and effect change.

“The Occupy movement, stopping SOPA, and the power of six million users of Change.org are only three of many examples of how new media impact politics in America, especially as politics are practiced among young people” (Cohen, Kahne, Bowyer, Middaugh, & Rogowski, 2012, p. v). In surveying 3,000 young people between the ages of 15 and 25, the MacArthur Research Network on Youth and Participatory Politics documented that just over a third of the American youth had participated in at least one act of participatory politics in the preceding year. Researchers had noted only a spread of 7% points at the widest gap charting such acts among diverse racial groups and a two percent gap at the smallest. Above that, all the groups had 94% or higher access to online computers, challenging existing assumptions about a standing “digital divide” (Cohen et al., 2012, p. vii).

American teenagers thereby much more readily utilize online opportunities to structure their participatory political actions. Social media and Web 2.0 allow young adults to directly engage worldwide phenomena and trends, to directing their own exploration of the issues, and to take whatever actions they find meaningful. The result is a problem-based learning experience more authentic than anything currently offered in most American schooling.

The *ill-structured* boundaries of real-world challenges offer adolescents the opportunity to learn about civic participation by engaging in real action. The Internet offers adolescents unprecedented access to the world outside school doors. Some argue that connectivity promotes a “participatory culture [...one with] relatively low barriers to artistic expression and civic engagement” (Jenkins et al., 2009, p. 6) that in effect builds community because it creates the opportunity for sharing and mentoring via social interactions for those with common interests.

Cultural critics argue that schools are “slow to react to the emergence of this new participatory culture” (Jenkins et al., 2009, p. xiii); and schools fail to support teens in the development the *new media literacies* that support development of cultural competencies and social skills necessary for full involvement. Put simply, the failure of schools to fully integrate social media and technology into subject-content cuts off the civic participation of youth.

It also prevents adolescents from keeping up with national standards for education in an increasingly international world. The Common Core State Standards, adopted in recent years by states across the United States, include requirements that digital media be included in the set of research and production skills students possess. By not developing adolescents’ full range of new media literacies, schools are leaving them woefully unprepared to meet these literacy goals. One must ask, why are schools not more able to increase civic participation and literacy through new media and access to participatory culture? Just as importantly, one must ask how educators can support or scaffold students through such a journey?

Adolescents and schooling: Intertia. One of the challenges in faced by public schooling is an ever-changing understanding of what qualifies as effective civic participation. At the beginning of the twentieth century, public schooling was viewed as part of the American crucible— the great melting pot metaphor. School was expected to train new immigrants to

access the American workforce and educational system— training them in public schooling quite literally to toe the line.

Mid-twentieth century, public schooling was asked to inculcate the newly empowered middle class in civic-minded behavior while freshly focusing American youth on the science, technology, and math required to take dominance in the Cold War and in the space race. In the complex years of the late 20th century cultural upheavals and a post-colonial sensibility altered the status-quo of expectations.

The twenty-first century has brought widespread globalization and neoliberal policies focused on dominating the new economy. Social media and ubiquitous technology has further changed the definitions of civic participation. Young adults have made international history on multiple occasions through their YouTube viral videos, their Facebook, their tweets, and their documentary journalism shared through viral campaigns.

As a result, public schools today face complex inputs— demands for programmatic and fiscal accountability, public concerns of governmental spending and property taxes, commerce dictated by the billion-dollar testing industry, and competition from a new wave of publically funded charter programs.

Despite being less accessible to the masses, the nineteenth century schooling system espoused an ideal that it could transform any participant into an intellectual ready for the academy. The twentieth and twenty-first centuries are accused by some of taking the position of sorting young people into careers and intellectual categories that determine their trajectory. The growth from one-room schoolhouses and rural school settings to large urban school districts filled with a diverse population of new immigrants engaged a battle around academic design and governance. At the turn of the twentieth century, public education in major United States cities

like New York, Philadelphia, and St. Louis, was embattled with municipal government leaders, wealthy intellectuals, social reformers, journalists, and those studying educational administration debating how schools should best be run (Tyack, 1974).

Called into question was whether a school system could succeed by actually offering all children a road to academic success, or whether schooling was to have a very structured role in the path to one's future as a worker. The battles over the political governance in these school systems was heavily affected by two forces-- there were successful "leaders of the intellectual life of the city...[who] assumed that what was good for their class and private institutions was good public policy as well" (Tyack, 1974, p. 130) and there were an emerging set of university academics who were quickly pressed by government and activist alike to step into the role of *administrative experts* who could define a cohesive approach to understanding educational administration.

Between 1901 and 1930, educational administration figures emerged, defined, and defended an increasingly public administered system of education— from David Snedden and Samuel Dutton to Ellwod Cubberly and George Strayer (Tyack, 1974), these influential administrators pushed the public education system toward a more methodological approach. The result of this business and scientific approach that moved toward more universal and compulsory high school commencement and increased size, scope, and professional training for educators; the same changes also differentiated, sorted, and tracked students' participation in the learning on the basis of "scientific tests" (Tyack, 1974, p. 182) and "detailed records on students from IQ's to physical history and vocational and recreational interests" (p. 183).

Public education in the first half of the twentieth century was redefined by the *administrative progressives* who denied the popular nineteenth-century vision of public

education to shape academic success for all; instead they responded to increased ethno-cultural and socio-economic diversity through developing additional offerings to which they restricted students to produce workers who could meet pragmatic employer needs (Tyack, 1974).

This period of the administrative progressives defined the tracked classrooms and standardized testing paradigm that still dominates. Although multiple iterations of *standards* have been proposed and revised from state and national level movements over the decades, very little has changed in the actual format of schooling. Testing remains the *raison d'être*, even in American cities that have embraced group work, accountable talk, and project-based activities.

During the end of the first decade of the 21st century, the Common Core State Standards (CCSS) grew out of higher education's response to a secondary educational system that was built around standardized testing that surveyed surface understanding. The complaints of college professors, especially in math and science, were that students possessed much surface knowledge about non-vital subjects but failed to demonstrate critical thinking skills grounded in discipline-specific knowledge. These standards have sought to define a wider range of literacy and numeracy grounded in applied knowledge, performance assessment, and integrated technologies. The adoption of these standards across the United States has engaged states to define a wider berth of skills and expectations when talking about ensuring that a student is literate and able to read, write, and speak at graduation level benchmarks.

Developing New Media Literacies

Public schools and technology: New media literacies. For a generation raised on web-search tools, smart phones, and social media, education is no longer taking place solely in textbooks. However, there have been widely variable experiences when teachers attempt to integrate technology into public school classrooms. Pew Institute's 2012 research with a non-

probability sample of 2,462 educators associated with the National Writing Project and the College Board's Advanced Placement program voiced some of the technology concerns that still plague educators.

Over 90 % of those surveyed credited the Internet as having a major impact on their own content gathering and over seventy percent praised its impact in facilitating communication among parents, teachers, and students. These teachers also spoke to qualitative conflicts in the integration of technology. Teachers working with low-income populations reflected in much greater numbers concerns about the negative impacts of school policies, planning, and resources on their students; while 60 to 83 percent of the teachers questioned aspects of Google, Wikipedia, and other online tools on which they relied on heavily but found limiting (Purcell, Heaps, Buchanan, & Friedrich, 2013).

The Common Core State Standards (CCSS) speak to digital media and technology by suggesting that college and career ready students can: enhance English language arts skills through thoughtful, strategic, and capable technology usage; perform targeted informational research; evaluate tools, mediums, and data to their communication goals; and synthesize online and offline knowledge (National Governors Association Center for Best Practices [NGA], Council of Chief State School Officers [CCSSO], 2010). As an anchor document that focuses attention on performance goals, it does not pave a road toward classroom implementation. The CCSS anchor document directs educators toward its implementation arguing that it must be “complemented by well developed, content-rich curriculum consistent with the expectations laid out in this document” (NGA, CCSSO, 2010, p. 6).

If contemporary standards direct educators to integrate technology and media literacy into secondary classrooms, then why does such a disconnection exist between these expectations

and implementations in the classroom? In 2001, Barbara Means contrasted the growing availability of technology in the classroom with the failure of supports, resulting in students and teachers not using technology properly and selecting tasks that don't really match up to the strengths of the technology (Means, 2001).

Means stages technology's entry into the classroom into eras—defining the 1980s as a time of “content through computers” (Means, 2001, p. 58) skill and drill software. She portrayed the late 1980s and 1990s as being driven by the replacement of content specific software with “general-purpose technology tools, such as word processors and spreadsheets” (p.58) and illustrated through slogans and powerful statistics about the success of e-rate, the ways in which the late 1990s and early 2000s became dominated by goals of connectivity, search engines, and web-based tools in the schools (Means, 2001). It seems that the growth of access to processing power and connectivity has in fact driven educational technology towards information gathering and away from subject-specific goals.

Nothing better exemplifies this late 1990s and early 2000s trend than the five-component tightly structured WebQuests developed and shared out from San Diego State University by Bernie Dodge and Tom March. Dodge suggests that the model serves as particularly powerful for social studies investigations by shifting attention from web searching to web resource or informational usage (Molebash & Dodge, 2003).

Dodge markets the approach as inquiry-based, offering models of project-based activities that range from 1-3 periods to 1-4 weeks, advocating that the end-product constitutes a performance assessment. He holds up WebQuests for their ability to “provide a significant amount of scaffolding to students” (p. 160) based on the intense degree of predetermination of resources and outcomes generated by the teacher. One can imagine why the model gained

traction in numerous K-12 and higher educational settings during the late 1990s and 2000s.

According to some estimates, the growth of WebQuests between 1997 and 2007 was so great, that a Google search by name yields over one million websites that refer to the topic (Maddux & Cummings, 2007).

Community college librarian Deborah Spanfelner (2000) extols the benefits that WebQuests lent to her collaboration with an English professor for a United States Literature class. She describes a three-stage WebQuest that engaged students to expand on literature they had read by first being guided to specific sites to research the author of their piece, then being directed to become a fictional voice for a character in the book based on their research during a face-to-face library visit, followed by utilizing an electronic library database to gather literary criticism on their piece. Spanfelner (2000) wrote an article for a community college library publication describing the excitement of visiting students and her own fulfillment in technology infused library activities. The article lacked formal or structured research on the process and any quantitative information, even on demographics. The other glaring problem that the article fails to recognize is that the experience that was crafted was simply an electronic version of traditional book and library research process. Students did not gain any deep experience of the web—they did not even get the level of experience they might have received sitting at an online research terminal in a library. They were simply guided into a high-tech journey into the world of books (Spanfelner, 2000).

Barbra Means offers a vision of how classroom activities can turn towards authenticity in her turn of century predictions about the future of educational technology, having predicted a shift from informational hunting and gathering to online collaborations and use of mobile devices by students gathering information. She highlights the existence of early practice-

oriented online ventures like the Global Learning and Observations to Benefit the Environment (GLOBE), the Hands-On Universe, and the Knowledge Forum, offering students and teachers alike the ability to share data, participate in learning communities external to the school, and even share content amongst classes (Means, 2001). Her reflections showcase the need for changes in classroom concepts of the interaction among technology, pedagogy, and content knowledge.

In the decade or so since Means' predictions, classrooms have still lagged behind while the landscape of Web 2.0 and social media provided a fertile ground for commercial and academic writing and cultural analysis?

In analyzing trends of social media dominating the writing establishment in the 21st century, Jonathan Alter (2012) noted in his *Wall Street Journal* article that the online platform Wattpad had seen begun to pass notable benchmarks including a rise in total postings past the 500,000 mark, an overall 144% increase in posting, and almost 2,000,000 site visits to a specific post inspired by the *Hunger Games* series. In the same article, Alter (2010) credits fanfiction.net for its passing of the 500,000 posting mark and for the bragging rights as the platform which emerged future Random House *50 Shades of Grey* author E.L. James via a self-publishing a *Twilight*-inspired fan fiction piece (Alter, 2012). Online fandom sites have become a new launch pad for aspiring writers to develop their skills, establish a following, and practice toward commercial success (Alter, 2012). These sites have become the location for many to practice the same English language arts skills with which educators are struggling to engage students.

Additionally, the ease of Web 2.0 tools like Livejournal, Wikia, and Blogspot have enabled passionate fans to create flourishing affinity groups powerful enough to revive canceled media in new forms and to establish an academic discourse around the materials. In 2010, four

years after the end of its eight-season television run on the WB television network *Charmed* was given a second life as a comic book due to fans great interest in new canonical content.

Similarly, both the television series *Buffy* and *Angel* have each been revived into new multi-season comic book journeys with their original creator Joss Whedon at the helm. The online world has offered academic fans from university settings the space to popularize their elevation of these same source materials into formal intellectual pursuits. *Slayage: The Journal of the Whedon Studies Association* gathers a bibliography of conferences, journal articles, books, and studies taking scholarly aim at *Buffy* and *Angel* among other serious fiction textual analysis (Hornick, 2017, March 27). How have online social environments effectively scaffolded the advanced writing and textual analysis exercises that Common Core State Standards classrooms have only hoped to achieve?

Participatory cultures: new media literacies. Some authors have tackled the questions of the ways in which the Web 2.0 world connect *Harry Potter* fans or those people engaging with Wikipedia. As indicated above, teachers and students alike turn to Wikipedia for everything from trivia location to lesson preparation and research papers. Potter has likewise come to occupy a powerful role in cyberspace, directly at the center of an emerging culture of online fandom engaged in complex emergent academia.

In *Convergence Culture*, Jenkins (2006) documents the “[Harry] Potter Wars”—the complex battles between Warner Brothers corporate interests, the affinity groups for potter fan fiction grown online in *The Daily Quill*, the youth-run writing world of *The Daily Prophet*, and J.K. Rowling’s desire to encourage fan writing. He suggests that the emerging convergence culture spawns moral ambiguities and places societal stakeholder groups to be “struggling with

the immersive nature and expansive quality of the new entertainment franchises” (Jenkins, 2006, p. 204).

The now inactive website named *The Daily Prophet*, was developed by a thirteen-year-old home schooled student as a mock-online school newspaper for Potter’s *Hogwarts School*. Over time the site became an opportunity for many young people to write autobiographical profiles integrating their life and the world of the fiction, while others wrote full-length stories on which they were given feedback. Jenkins suggests that the site offers a powerful interplay between J.K. Rowling’s elaborately described fiction world and the real-life challenges that international youth face as they struggle to make sense of their own uniqueness and the degree to which they fit into a realm of special or mundane (Jenkins, 2006). This represents a powerful change in the notions of literacy by introducing the premise that teens motivated by positive-online peer support can exceed the functionality of traditional schooling attempts at furthering English Language Arts literacy.

Jenkins also presented two Harry Potter fan fiction sites: the still operational Fiction Alley, a site with 200 plus volunteer staff and 40 hands-on mentors, and the defunct The Sugar Quill, a site that engaged Potter fan fiction and offered peer-editing and constructive feedback from other writers from 2001 until 2008 (Jenkins, 2006). He argues that sites succeed where traditional schools fail by making professional writing feel accessible, activating a critical textual analysis, taking a community-wide approach to helping *newbies* find their way, and providing a participatory culture to support adolescents as they freely explore the environment (Jenkins, 2006).

Neither the Potter Wars nor Wikipedia occupy real space, but both have become forces for social co-construction of a virtual space with great semiotic substance. The spaces offer a

magical environment for teens where they have instantaneous access to collaboration and media production. This is a far cry from two decades ago where adolescents and young adults waited for hours to access limited online resources—trying to use PsychLit or PINE. In the post-Y2K world of file sharing, YouTube, Facebook, Google Apps, bit torrents, DropBoxing, in which first-world adults are tethered to ubiquitous mobile devices adolescents have followed suite.

Social media binds adolescents and adults in participatory communities where they exercise freedoms from the conventional corporate notions of information, media production, and institutions. This has a powerful impact on contemporary notions of schooling.

The school expects every student to master the same content, while Wikipedia allows students to think about their own particular skills, knowledge, and experience. Wikipedia invites youth to imagine what it might be like to consider themselves as experts on some small corner of the universe. (Jenkins, 2007, p. 2)

Learning Technologies: Disconnects and Solutions

Online cultures and schools: The digital divide. Potter, Jenkins (2006) argues, is “a struggle over competing notions of media literacy” (p.174) within the “informal pedagogy” (p. 174) of the fan community, the school-based influence of Potter to capture readers, the corporate interests over controlling media production, and the challenges from religious and conservative influence regarding Potter’s dominance (Jenkins, 2006). The result is a rich semiotic space that joins youth, imagination, and educational aspiration. As social media and Web 2.0 sites provide young adults the ability to have meaningful roles as collaborators and innovators, they change the landscape of what it means to have power over one’s own learning and development.

In the *Harry Potter* novels, the protagonist experiences a move from outcast to civic participant in the grandest of battles between good and evil. The virtual world of Web 2.0 and social media legitimize twenty-first century fandom on their own parallel journey. *Convergence Culture* speaks to the new roles of fans and fiction. It posits that individuals occupy a much

more pervasive, participatory, and populist role with media. “The new Hollywood demands that we keep our eyes on the road at all times, and that we do research before we arrive at the theater” (Jenkins, 2006, p. 104) we are told in a chapter breaking down the ways that the *Matrix* and other key franchises have embraced transmedia storytelling. Just as youth are now drawn into the task of reading texts across multiple media platforms, they are given constant opportunity to communicate back to the same texts.

It is a role for which they are only partially prepared. *Convergence Culture* builds on concepts elaborated by Mizuko Ito drawn from her 1998-2002 Tokyo fieldwork studying Japanese mass media and examining corporate and familial stakeholder groups and the *media mix*. Her assertion from this anthropological view was that virtual and real worlds started to mutually “colonize” (Ito, 2003, p. 31) each other and generate an existence that comingles, becomes intertextual producing narratives that cross media and physicality, and impact boundaries and larger metacognition where children’s fictional and real-world play inhabit a meta-narrative (Ito, 2003). Her work offered a vision of understanding how fans’ real lives can both parallel and become participant in the life of story.

Some intellectuals suggest that the presence of pervasive new media production opportunities allow for “distributed collective creation, co-operative learning and networking” and claim they “call into question that the functioning of institutions and the accepted forms of the division of labor” (Lévy, 1997, p. 249). The implication for mass media is game changing—companies can no longer solely define the spheres of consumer and producer. The numerous works of Professor Henry Jenkins (Jenkins, 2006; Jenkins 2007; Jenkins et al, 2009) draw on Pierre Lévy’s (1997) concepts of collective intelligence, and often speaks of the cultural shift opened by new media technology. According to Henry Jenkins (2006), “Convergence does not

occur through media appliances, however sophisticated they may become. Convergence occurs within the brains of individual consumers and through their social interactions with others,” (p. 4). In this way individuals become a living, breathing part of the medium—participants in the playful mixing and matching of old and new media.

The theme of backchannel communication runs across the work of Jenkins and Ito capturing the ways in which new media are “quietly radicalizing a new generation’s relationship to culture and social life” (Ito, 2003, p. 34) and enabling the consumers of mass culture to send contribute to a popular culture and then massively share it through digital means and in doing so “represented a visible, public threat to the absolute control the culture industries asserted over their intellectual property” (Jenkins, 2006, p. 137).

The result is a shift in individual’s connection to media— enabling cyberspace to serve as a collective intelligence where living human communities can restore the oral traditions of pre-history telling their own stories in a post-modern way— moving us beyond the limited run canonical first era of written communication and the more mass but equally canonical post-Enlightenment attempts for definitive reference and expertise, (Levy, 1997, pp. 254-255). As the virtual world becomes a primary space for real world interactions, it privileges unique voices into collaborative communities of voice. Tweeting, Youtube videos, blogs, and other social media have allowed unknown teens to turn into authentic pop culture stars—blurring the line of celebrity. Every year, *Youtube stars* gain brief or extended popularity, with faint memories of Bo Burham’s teen cabaret-style comedy stardom or Rebecca Black’s brief summer hit pop celebrity serving as reminder that we live in a brave new world where social media and online technologies have literally redefined the way consumer media businesses operate and financially operate and the quick cycling of such endeavors as grist for the mill.

Again, it is a role for which adolescents are only partially prepared. Although they have increasingly adopted the technological skills, gained a world-wide media stage, and participated in a large volume of writing exercises, they have not necessarily gained the well-rounded informational literacy that will sustain their personal and professional ventures for decades to come.

Young adults have been accused of indiscriminately sharing their most intimate thoughts and turning their life journey into banal experiences through overuse of social media. Articles from the *Harvard Business Review* to the *Wall Street Journal* have proclaimed the dangers that the new generation faces in their ubiquitous online personal narrative. These gaps in their knowledge showcase the 21st century challenge around civic participation—a major challenge for educational institutions detailed earlier in this chapter. In its modern iteration, civic participation requires a globalized awareness and utilizes high-tech tools that adolescents mostly employ socially.

External pressures force our public secondary education institutions to focus on standardized test scores while also trying to begin to learn performance based techniques that they had previously marginalized, claiming they were part of small-scale educational reform attempts. Despite the revived belief in small-schools and innovative methodology spurred on by the Bill and Melinda Gates Foundations' work, schools still do not seem prepared to scaffold students' journey through the media mix. This lack of preparation puts the need for further integrating civic participation in its 21st century form front and center.

Civic engagement is absolutely vital to help build adolescents' capacity to engage with learning beyond school doors. It is this hands-on engagement that colleges and companies prize in participants—the initiative and know-how to conduct. In his work to elaborate the alignment

of assessment, pedagogy, and student performance in the authentic assessment movement, Fred Newman and associates defined authentic achievement as being comprised of activities that support construction of knowledge, discipline-based inquiry, and a value to the world beyond the school (Newmann, Marks & Gamoran, 1995). Based on this definition, what can public secondary schooling do to connect discipline-specific content to the world outside the doors utilizing technology?

Can Civic Engagement, Technology, & Schooling Be Connected?

In the twenty-first century world of social media fans engage in the world of mass media production and consumption blurring the lines like never before and spend time practicing media and technical literacy without getting paid a dollar or having an ounce of the time mandated as official learning.

This is not shocking considering that some academics argue that *co-construction* as a part of social practices is a key element of engaging learning opportunities. They argue that learners will be most engaged when involved in “conversations that lead to their becoming part of an already existing community” and thereby in experiences built on “the actual practice of the target community” (Bopry & Hedberg, 2005, p. 103). Affinity communities around fandom need not be the only environment in which youth are encouraged to join practice. There is a robust world of discipline-specific content online enabling young activists to partake in social change, supporting young scientists to engage in observation and data sharing, encouraging young authors to share their writing, and capturing the interest of young mathematicians responding to challenges in problem-solving.

When Warner Brothers sought to restrict eastern European fans’ writing with cease-and-desist efforts, the *Daily Prophet*’s Lawver and British fifteen-year-old writer of a fan guide site

Claire Field took on the studio proving Lawver's assertion that "they underestimated how interconnected our fandom was" and that many of the fan sites knew and appreciated each other's work" (Jenkins, 2006, p. 186). The situation also showcases the power of young adults using the internet as a means of engaging with real-world entities around real-world issues. Introducing adolescents to the specifics of the "Potter Wars" and the resultant changes that come from youth exercising their online will bring alive civic participation in secondary school subject-content.

In these ways, we see a vibrant community of learners feeling empowered to control their own learning. This turn of events is portrayed as the exception to the previous history of fights over what many deem as children's popular culture. In this case youth empower each other and develop their ability to communicate their writerly voice in fandom, defining the entire landscape of new media venues while instructing each other in the most subtle ways on matters of "globalization, intellectual property struggles, and media conglomeration" (Jenkins, 2006, p. 205) in a way that should make adults stand up and listen.

Implicit in Pierre Lévy's (1997) description of cyberspace is the idea that the online environment created a paradigm shift in the twenty-first century, making a virtual worldwide common space for disparate individuals to engage in communal sense making. Henry Jenkins (2007) further delves into this communal work in his official weblog as he muses on the *knowledge culture* implicitly bonding Wikipedia participants as they collaboratively pool knowledge and fill in the intellectual blanks. The Wikipedia community is held up to be one of the many such contemporary online collaborative knowledge ventures, standing amidst massive multiplayer games and virtual learning climates (Jenkins, 2007).

This kind of learning and community seems to inherently possess the qualities that progressive leaders in both public and private education often idealize. It also suggests a route for connecting these disparate elements

There is, I think, no point in the philosophy of progressive education which is sounder than its emphasis upon the importance of the participation of the learner in the formation of the purposes which direct his activities in the learning process, just as there is no defect in traditional education greater than its failure to secure the active co-operation of the pupil in the construction of the purposes involved in his studying. (Dewey, 1998, pp. 77-78)

Educators interested in equity, social justice, and youth empowerment see value in a participatory new-media culture. As is widely suggested in the writings of Henry Jenkins (2006, 2007, 2009) and other cultural critics suggest, classrooms still lag deeply behind in this innovation. If there is an understanding of how the two worlds might connect, then one must wonder why educators in public schools still struggle to integrate hands-on learning strategies and technologies to increase discipline-specific civic participation beyond the school's doors. The answer lay in the challenges that educators experience in integrating technology, pedagogy, and content-knowledge.

As the WebQuest phenomenon described earlier in this chapter showcases, there is a tendency to embrace techniques that flatten the technology experience rather than risking the messy work of looking at the intersection of all three. The popularity of WebQuests also shows how teachers can favor controlled and directed experiences when unclear how to most effectively scaffold students' explorations. Luckily, there is a range of research that offers insight into the nature of cognitive scaffolding around technology. Such scaffolding is best understood through a model of looking for the intersection between technology, pedagogy, and content.

The Challenge to Rebuild a Connection

Introducing TPACK to improve classroom innovation. Since President John F. Kennedy's urging for the United States to attain victory in the space race of the 1960s, the American public school system has tasked with preparing students who can meet competitive global educational challenges, especially in terms of science, math, engineering, and technology. As the personal computing technologies of the last two decades became a more ubiquitous part of competitive global cultures, the American educational system has found a deeper challenge in properly integrating these technologies. Classroom teachers were urged to provide students 21st century skills, but left with a very fuzzy picture of how this could be done in a holistic manner.

During the first decade of the 21st century, researchers Punya Mishra and Matthew Koehler (2006) elaborated a lens of Technological Pedagogical Content Knowledge, which they began to define and develop through a series of design investigations with educational technology teams. Their observational and first-hand anecdotal content exploded a schism that Lee Shulman (1986) had defined two decades earlier in an *Educational Researcher* article that noted its origins in a speech he had made the year earlier at a national annual researcher convention.

Shulman had spoken of an industrial age dichotomy between pedagogical practice skills and teacher content knowledge, and drove the point home by citing diaries that shared the narrative of a thirteen-year-old who had once received a one-year Vermont state teaching license in 1881 merely because she passed written testing (Shulman, 1986). In showcasing this tendency toward general knowledge over pedagogical know-how he showcased the set-up for educators by and large lacking an understanding of the concepts and affordances we use in teaching in given

circumstances. Innovation in academia and educational content remains a challenge if we are not clear on the context of our teaching.

Shulman mapped the areas between these separated territories expanding content knowledge to include: the discipline-specific behaviors and standards that embody *content knowledge*; the curricular knowledge that represent a strong awareness of program materials and benefits; and the *Pedagogical Content Knowledge* (PCK) that incorporates conceptions, representational forms, and learning trends within given subjects (pp. 9-10). He distinguished highly effective teaching as recognizing this interplay— which also allowed richer discussion of the teaching elements within subject areas and among disciplines.

During the twenty years that followed, select researchers expanded on these ideas. In their seminal 2006 work Mishra and Koehler visualized Shulman’s contribution as speaking heavily to the intersection of content and pedagogy (p. 1022). Mishra and Koehler (2006) argue that technology has shaken up the educational concerns involved in teaching and demanded a new balancing act among content, pedagogy, and technology to define the forms of knowledge that “expert teachers bring to play anytime they teach” (p. 1030). They argue that several iterations of their research have led them to see an observational lens that has emerged a Technological Pedagogical Content Knowledge (TPCK). The TPCK is offered as a full-fledged framework with the power to integrate research and pedagogy due to its descriptive capabilities, its application to real-world investigations, and its ability to engage exploration of “inferences about the causal mechanisms” (Mishra & Koehler, 2006, pp. 1044-1047) of technology integration. By adding the technology dimension, they define and elaborate additional intersections expanding Shulman’s PCK approach. The figure below showcases their

representation of the dimensions that emerge in Mishra & Koehler (2006), as they conceptualize them now.

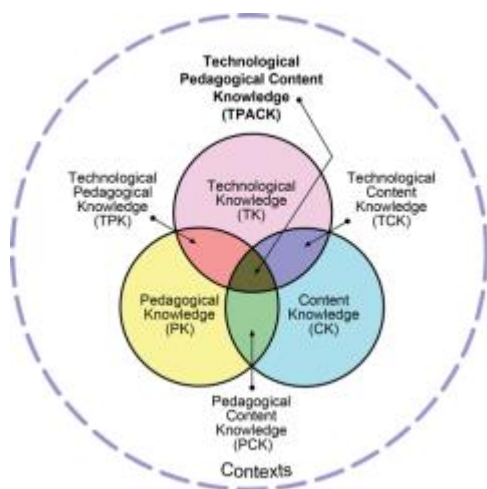


Figure 1. Mishra & Koehler’s Visualization of the Union and Separate Elements of TPACK. From “Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge,” by P. Mishra & M.J. Kohler, 2006, (<http://tpack.org>). Copyright 2012 by TPACK.org. Reprinted with permission.

By introducing these additional spaces, Mishra and Koehler (2006) offer a significantly more complex terrain that adds the affordances of specific technologies, the impact of technologies on content materials, and the pedagogical implications of which technologies are the best fit for select circumstances (2006). In 2008, the National Technology Leadership Summit adopted a definition of “effective technology integration” (SIGTE/NTLS, 2008, p. 23) that embraced this “total package” (p. 23) conception renaming TPCK as TPACK. Despite its relatively recent renaissance and the need for ongoing studies, TPCK/TPACK has become an attractive 21st century research paradigm for studying teaching and technology. It is not only an attractive paradigm, but a necessary one given the new national requirements for students’ media literacy requirements.

TPACK and the Common Core. The Common Core State Standards (CCSS) propose core English Language Arts and Math performance standards while also engaging educators to think about literacy and numeracy across disciplines. This approach fits very naturally with the

approach that TPACK takes, looking for the intersection and unique affordances of technology, discipline-specific knowledge, and pedagogy. The CCSS encourages a rich look at where English Language Arts and Mathematics skills can be demonstrated across the K-12 curriculum. The CCSS similarly add context to the skills, opening a dialogue about the function of non-fiction writing in English skills, the incorporation of digital tools to express literacy and numeracy, or the application of numeracy, data, and graphing in multiple subjects.

Within the English Language Arts standards for 9th through 12th grade, there are breakdowns of the literacy skills, writing skills, and social studies/science skills, which should be developed at each grade level. When looking to the skills that are mapped to the first two years of high school, there is a discernable focus on a students' capacity to draw on technology as both an input and an output tool.

In defining students' need incorporate research into their actual presentation of their understanding, ELA writing standard 8 for students in grades 9 and 10 indicate that a student must be able to

gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation. (NGA, CCSSO 2010, p. 46)

The 9th/10th grade writing standard 7 within the ELA Literacy items asks that students can:

Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation [in an effort] to build and present knowledge. (NGA, CCSSO 2010, p. 46)

The fourth reading standard, at the same level asks that students can use “vocabulary describing political, social, or economic aspects of history/social science” (NGA, CCSSO, 2010, p. 47) while writing standard 9 asks they be able to effectively “compare and contrast” (p. 47) the treatment of the material across multiple primary and secondary sources.

In so many ways, this pairs with the Jenkins’ skill-sets described earlier. Both hold common a contention that twenty-first century students must be able to effectively drive along the information superhighway, developing a skill to know what exists to drive past and what exists to stop at for fueling.

The Common Core State Standards also present requirements that speak to a student’s ability to output and share the information in ways that are viewer-friendly providing the opportunity for public defense, review, and publishing. The ELA Writing standards for grade 9 and 10 include expectations in standards 1b and 2, that students will be able to gather solid data and evidence that support discipline-specific claims and counterclaims, and then target these into “informative/explanatory texts, including the narration of historical events” (NGA, CCSSO, 2010, p. 45) that “include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension” (p. 45).

The sixth ELA writing standard for students in grades 9 and 10, is one which specifies that the Internet and technologies be integrated at the level of helping students “to produce, publish, and update individual or shared writing projects” (NGA, CCSSO, 2010, p. 46) and linking to information in a fashion that is displayed “flexibly and dynamically” (p. 46). It is these last three standards that truly require students and teachers to develop the rich understanding of the affordances of Web 2.0 and social media. They require this understanding

of how the technologies fit into instruction and learning because they ask both parties to be engaged in the selection of the most appropriate formats and to be dynamic in use of the tools.

It is precisely these standards that make the nature of WebQuests unacceptable and relegate them to the past. WebQuests limit both teacher and student exposure to authentic web-based literacy. The element of choice is key to the development of these skills.

Chapter 2: Leading with TPACK to Explore Social Studies Civic Participation, Technology, and Problem-Based Learning

This research study proposed to use the lens of TPACK as a framework for designing, analyzing, and revising a unit of instruction named the *Voices of Representation Curriculum* (VORC).

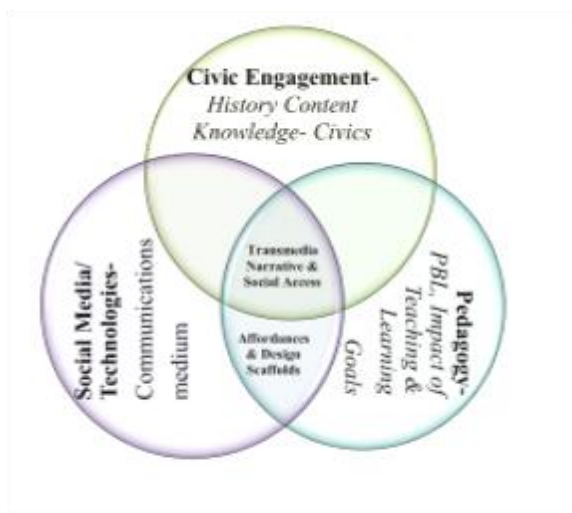


Figure 2. Voices of Representation seen through TPACK lens.

This design-based research introduced and refined specific cognitive scaffolding techniques to support the VOR instruction for a group of high school social studies students at a progressive public school in a major northeastern urban district. This process used the framework of TPACK to better understand the complex interplay of technology, pedagogy, and content-knowledge in innovations that involve hands-on inquiry in the high school classroom. In the context of the VORC project research: the content was social studies, namely the government and civic participation strands; the pedagogical approach chosen was problem-based learning; and the technologies used were digital media tools made available through Web 2.0 and mobile social media.

To best understand the theoretical underpinning that supported this research initiative requires a greater exploration of TPACK, problem-based learning, civic participation, and the challenges that have arisen during technology-integration in content-area classroom activities. These connections became even clearer and more relevant if one considered the Common Core State Standards that have come to dominate the second decade of the 21st century in America. These standards have sought to connect classroom learning to higher levels of college and career preparation— real world applications. The model best aligned to the problem-based learning approach that has long dominated law and medical school programs. A survey of the literature shows effective implementation of the model in both higher education and K-12 learning, demonstrating deep natural connections with the primary and secondary educational theories of John Dewey, Maria Montessori, and Ted Sizer. Problem-based learning research projects that incorporate technology offer strong examples of strategies for success.

Civic engagement, as discussed in Chapter 1, is key to supporting adolescents in taking an active role in the world beyond the school's doors. As a concept, it grows so nicely from the expectations we have for high school social studies to properly acquaint young people with the options for participation in government and the world beyond the school's doors. This chapter examines several conceptualizations of civic participation and its power to enhance the high school social studies curriculum. Several educators' attempts to effectively bolster high school social studies with web 2.0 and social media are detailed.

Social media and web 2.0 have offered access to a media mix wherein adolescents engage participatory cultures. In that capacity, they open the door to a level of civic engagement not so easily accessed before. Within this chapter, concepts of new media literacies are

connected to relevant common core assessment strategies. The result is a vision for assessing student work and student skill growth.

The Voices of Representation Curriculum unit and this research proposed around it, drew on the TPACK framework to understand the interplay between technology, pedagogy, and content knowledge. Chapter two provides additional detail on TPACK's origins, and hones-in on elements such as scaffolding, that support innovations.

Design-based research is detailed as a model most appropriate for research to refine these scaffolds. This is primarily because design-based research allows researchers to situate the phenomenon they are studying in action that is both beneficial to the participants and relevant for building further knowledge that can be developed and generalized for other contexts (Barab, 2014).

One can anticipate that scaffolds are important to new learning strategies, but this VOR project research seeks to establish a cohesive approach to exploring the fidelity of these scaffolds and refining them with appropriate improvements.

Pedagogical Content Knowledge Enriches Teaching Practice

When Lee Shulman sought to better understand the issues of Pedagogical Content Knowledge, he followed a group of English, biology, math, and social studies teachers in California through their educational school preparation year and into their first year of teaching; his goal was to best understand “the transition from expert student to novice teacher” (Shulman, 1986, p.8) especially as pertains to the development of their “intellectual biography— that set of understandings, conceptions, and orientations that constitutes the source of their comprehension of the subjects they teach” (p.8).

Through routine interviews with the participants, direct observation of their post-interview teaching, and data gathering at their teacher educational programs, Shulman was particularly attentive to the “strategic research sites and key events” (Shulman, 1986, p.8) that occurred as teachers faced preparing units on material which they found novel, which they only distantly recalled, or which lacked strong supporting content materials.

To provide a model for talking about the concepts and patterns he felt existed within content knowledge, he suggested the categories of subject matter content knowledge, pedagogical content knowledge, and curricular knowledge.

Shulman clarified his understanding of the subject matter content knowledge by elaborating his interpretation of previous educators’ works which distinguished differences between understanding the substance of a discipline’s content and practices and the syntax or procedures specific to that discipline through which someone might test and evaluate phenomenon. Shulman (1986) addressed subject-context, arguing that quality teaching demonstrates the ability to vet propositions and materials from amongst alternatives, aligning to the theoretical and practical hierarchies and syntax of the field (p. 9). In defining this dimension, he established a way of talking about teachers’ understanding of the nuances of what they were teaching, and their ability to demonstrate expert choices within the field. This is particularly relevant to any exploration of innovation or technology in the classroom, because it speaks to the dimension of teachers’ understanding the subject matter enough to understand the new tools that are relevant within the field, especially those that are actually used by professionals.

He differentiated *pedagogical content knowledge* as the expertise in the aspect of content knowledge that helps an educator understand forms enough to open learning for the learner through bringing the examples, manipulatives, imagery, forms, and visual representations that

make conceptual sense for clarity (Shulman, 1986). In developing this as a separate dimension, Shulman (1986) helps clarify another aspect that is relevant to thinking about teachers and innovation. A thorough understanding of the techniques involved in teaching and the struggles involved in learning are particularly relevant to the process of developing innovative activities and making them student-friendly—properly supporting the student while maintaining academic rigor.

Shulman (1986) defined a third subset that he calls curricular knowledge and proclaims as the least professionally taught and least understood dimension. Within this conceptual area, he argues two premises. He feels seasoned teachers should have a comprehensive understanding and ability to deftly select from among all the curricular or teaching material options that exist. He also argues that mature teachers at the secondary level should have be able to laterally connect their courses to content from other subjects occurring for students during the same academic year and to build on the vertical content of the material that has come before and after within their own subject (Shulman, 1986).

Recent History of Technology Integration Without TPACK Failing

New Zealand educator Louise Starkey (2010) used a case-study of six digitally confident first-year secondary school teachers to highlight her perceived need to update Shulman's (1986) teacher as transmitter of knowledge premises. She argued on behalf of a more connected mentality in which we reconceive a teacher's shift from knowledge source to knowledge expert, gatherer, and redistributor (Starkey, 2010).

Her central argument was that in all six cases the teachers trusted in the potentiality of Web 2.0 applications and sites but were unable to plant precise pedagogical techniques or identify theoretical points of connection to ensure their effective execution and students' gain of

content knowledge (Starkey, 2010). Although many of her concerns are answered to in Mishra and Koehler's TPCK and the NTLS's adoption of TPACK as a total package of these complex layers of interaction, it is perhaps worth noting that Starkey's (2010) concerns represent a genuine gap in how teachers are prepared to make use of technology. In her study, she found that teachers relied most heavily on their past pedagogical knowledge and adapted their work with students based on pedagogical assessment techniques of inquiring with students how the technologies were or were not helping them learn. In this way, she points out that teachers in practice may remain relatively disconnected from a knowledge base that draws them into understanding the territory with technology and pedagogy intersect.

Starkey's (2010) argument that many teachers face a lack of a pedagogical model that incorporates technology effectively plays itself out in many secondary and higher educational classrooms. Barbara Means (2001) contrasted the growing availability of technology in the classroom with the failure of supports, resulting in students and teachers not using technology properly and selecting tasks that don't really match up to the strengths of the technology.

As mentioned in the first chapter, WebQuests represent a major moment in the educational technology landscape. As a trendy approach for several years, it represented the key concerns to which Starkey (2010) and Means (2001) speak. WebQuests illustrate how teacher and student task selection can be so easily hijacked to what is expedient rather than what is pedagogically appropriate and discipline-specific.

Some research projects have extolled the values of WebQuests, proclaiming the model as well "embraced by many educators" (Zheng, Perez, Williamson & Flygare, 2008, p. 296). In his secondary summary of research on WebQuests, Erdogan Halat (2008) advocates the model because it: can be motivation for students; can be inspirational as a creative, high order process

for teachers; can bring structure and important value to the internet research process; and offers alternative methods of assessing student understanding that require action. At the same time he acknowledges that students may not connect with the model if they are disinterested in the teacher's constructed scenario or are distracted once encouraged to go to a website by the WebQuest (Halat, 2008). Although the concerns make up only six lines of the article, they are quite powerful issues. The Internet as it has grown exponentially over the first decade of the twenty-first century is simply not controllable to a generation that is more native to technology than the preceding generations that were accustomed to print media. Based on everything we see of adolescents on their smart phones and mobile devices, it seems increasingly absurd to assume that students led to specific websites for a highly-constructed project won't make any side trips.

In a mixed-methods research project with 33 male and 36 female cohort members in the Hospitality Management and Leisure Management program at the University of Wolverhampton, researchers used a questionnaire and focus groups to conduct an exploratory investigation into the usefulness of WebQuests in higher education. Their analysis of the findings as suggesting that students were 100% behind (79.4% strongly and 20.6% in agreement) the value of using WebQuests to cover course material, with the only real concerns being about technological limitations in speed and printing, and the need to do the activities during class time (Hassanien, 2006). Despite the advocacy in this article that the WebQuest offered value to higher educational students, some educators raise real questions challenging around the purported value of the model to scaffold inquiry at higher levels.

In a 2007 essay in the *Educational Forum*, the authors assert: that short-term WebQuests focuses the participant solely on looking on the web with "no time spent on analysis, synthesis, and evaluation" (Maddux & Cummings, 2007, pp. 119-120); that long-term WebQuests are

incorrectly targeted to the developmentally unprepared primary school students who are not able to follow through on inquiry due to Dodge's online assertions that WebQuests can work as early as third grade; that WebQuest evaluation rubrics fail to account for developmental differences in learners; and that Dodge himself admits that WebQuests guarantees no particular content knowledge gain other than "experience in using the Web to find information" (p. 120). The authors do not portray WebQuests as inherently bad, but rather often misused. Ironically, some of the same researchers who acknowledge the value of WebQuests raise similar concerns about the potential areas for improvement.

A 2004 research project with 226 teachers from primary school to higher educational levels across 20 states, used two instruments to document and deconstruct teachers' experiences using WebQuests. The researchers used university servers to conduct online surveys with participants gathering demographic information and perception on WebQuests' value with critical thinking, knowledge application, social skills, and scaffolded learning through a 20-item instrument using Likert-scale questions. The findings essentially suggested that not all WebQuests are built alike, being impacted by teacher perceptions, experience, and demographics while also suggesting that educators should become "aware of the unique features of the WebQuests to design and develop WebQuests that would benefit learners at all levels" (Zheng et al., 2008, pp. 301-302).

Dodge suggests that a continuum exists where Web Inquiry Projects represent a more open-ended version of WebQuests that teachers can utilize. As much as he points to the more free-form nature on the same continuum, he undercuts the model by saying that the WebQuest "gives one more confidence that specific curricular goals are being met" (Molebash & Dodge, 2003, p. 162). In many ways, Dodge cashes in on many teachers' goals of not having a clear

road toward how they would personally and effectively integrate technology. Some would suggest that the strength of this model is that it offers teachers a specific route toward online content given the span of web content, the lack of clear high quality resources, the connectivity and maintenance problems of school computing. The claim is made that that the model has gained popularity from the mislabeled promotion of the activity as *constructivist* despite its lack of attention to learners' developmental capacity (Maddux & Cummings, 2007).

What Dodge cashes in on then is the educational inertia through which pedagogical innovation is met with equal and opposite opposing forces. A strand of research exists analyzing the role of teacher belief in the resultant curricular innovation or lack thereof. In Spring 2011, a research project sought to look how student-centered technology teachers perceived their own work and best practices. The analysis of the educators' websites and 35-60 minute semi-structured interviews identified innovators were motivated to overcome barriers by their own beliefs, but felt most negatively impacted by negative or pessimistic beliefs communicated by the overall educational system those who comment on their innovations (Ertmer, Ottenbreit-Leftwich, Sadik, E. Sendurur & P. Sendurur, 2012). If those who hold strong beliefs themselves are fairly impacted on by the challenges of others' perceptions, it is no wonder that masses would gravitate toward an easy-to-package model that reduces complex individual and social learning into a essentially guided electronic tour with project-based artifact requirements.

As mentioned earlier, Barbra Means (2001) offered a vision at the start of the 21st century which moved classroom activities toward the more authentic—she predicted a shift from informational hunting and gathering to online collaborations and use of mobile devices by students gathering information. The limitations toward implementation she suggested, were an aforementioned failure of a rich approach to conceiving of the interaction of technology,

pedagogy, and content knowledge. WebQuests failed to enrich educator's use of technology not because they were inherently bad, but because they failed to engage teachers in actually exploring how technology mutually reshapes their classroom methods or coverage of content knowledge.

Technological Pedagogical Content Knowledge (TPACK)

In trying to best understand why there has been such failure in integrating technology into the classroom, we are again drawn to instances in which researchers have studied technology integration in terms of its conceptual underpinnings in an attempt to define successful best practices. Mishra and Koehler's design studies provide us the best model for understanding with this lens.

What is Technological Pedagogical Knowledge?

Handheld devices, readily accessible media production software, wi-fi and broadband access, and widespread personal computing have revolutionized the adolescent community into savvy media critics and producers with more access than ever before. These technologies situated adolescents in a more globalized world by providing two important things— a hands-on approach to investigative problem solving and the processing capacity to collect and share data in unprecedented ways. These mobile and Web 2.0 technologies both support and require pedagogical practices which allow for a more exploratory learning by doing. Within Common Core State Standards requesting students to be able to sustain research around problems and their own generated questions, the methods of problem-based learning are particularly relevant to position students for technological and academic innovations.

Problem based learning as a pedagogical approach. Law schools and medical schools have been at the forefront of integrating case-based learning as a strategy for teaching students how to effectively develop a pattern for high context learning in fields where it is impossible to know all content. The model of generating student-directed learning through well-selected evocative cases and complex real-world problems is called *problem-based learning* within research literature.

John Savery (2006) differentiates the approach from simple inquiry-based activities by suggesting that inquiry focuses on facilitator mentoring, while the problem-based learning approach places responsibility for self-directed learning on the students as they try to develop a solution for a defined problem. According to its proponents, problem based learning is an approach that takes real-world challenges and engages small groups to work collaboratively to develop solutions. The best learning problems are *ill-structured* and require students to actively explore knowledge and collaborate under the coaching of an expert to develop a solid reasoning approach to solve the problem (Hmelo-Silver, 2004, pp. 236-237).

The model is not wholeheartedly embraced by all research as flawless. Problem-based learning became a normative model during the 1980s and 1990s in United States medical schools. Research and meta-analyses credited the model with increased “clinical problem-solving skills” (Savery, 2006, pp. 10) but other articles have suggested that research has been methodologically flawed and failed to establish problem-based learning (PBL’s) short and long-term superiority.

Even advocates of the problem-based learning model, acknowledge that research has been limited. Despite admitting limited K-12 research and a trend to use “case study, pre and post test, or quasi-experimental designs rather than controlled experiments,” (Hmelo-Silver,

2004, p. 260). advocates of the model suggest that these research approaches have offered “converging evidence” (p. 260) on the areas of constructing, solving, and supporting the students in self-directed learning. It is from this angle of examining the effective usage in higher educational research that we can see the value-added by the PBL in the classroom and in the research process.

While reviewing her own previous 1998 quasi-experimental study contrasting traditional and problem-based learning classes at a Midwestern medical school, Hmelo-Silver (2004) represented key benefits of PBL in increasing students’ performance. She reflected that students although students in the two sets of classes did not differ on assessments of “accuracy, coherence, and use of science concepts” (Hmelo-Silver, 2004, p. 250) in their first week of classes, that the PBL students became “more likely to produce accurate hypotheses and coherent explanations” (p. 250) and “use science concepts in their explanations” (p. 250) at the 3 month and 7 month observation points.

In her work from an exploration of a problem-based undergraduate educational psychology course in 2000, Hmelo-Silver offers an analysis of student learning artifacts. Viewing these artifacts from the duration of the course, she determined that early vague incorporations of theory about schema formation and long-term memory gave way to more sophisticated descriptions that actively referenced the ideas from wider understandings of theories on processing (Hmelo-Silver, 2004).

There is also evidence that suggests PBL increases students’ abilities to engage in constructing and refining their explanations. Hmelo-Silver (2004) reflects on her own past solo and collaborative work which she argues shows gains in students’ success in two PBL tutorial sessions or in explaining pathophysiological issues on exams; student group interactions

provided opportunities to reflect and refine their understanding, ultimately transferring these hypothesis-driven approaches into their individual self-directed learning activities (Hmelo-Silver, 2004). This again shows its value as both a model through which students can successfully develop discipline specific knowledge. Several research projects have showcased the specific ways in which technological pedagogical knowledge develops.

The intersection of pedagogy and technology in problem based learning. Some international research has showcased the intersection of technology and pedagogy through problem-based learning activities. The Electrical Engineering School and the Computer School of the University Complutense of Madrid in Spain began offering programming courses in an online virtual environment that supported student participants in “an enhanced problem-based learning approach” (Sancho, Moreno, Fuentes-Fernandez, & Fernandez-Manjon, 2009, p. 112) that grounds 3-D immersive environments, avatars, social learning bonds, and positive competition to integrate new knowledge as a means to effectively solving game challenges. In the case of this project, the technology offered an added dimension through which students could expand their problem-solving into the virtual world.

The software engineering and artificial intelligence department at the university researched the instructional impact of infusing 3-dimension virtual environments into their programming courses. Using the immersive challenge based *Mundo NUCLEO* and *Mare Monstrum* environments, students in select courses were engaged in teams of three or four to solve combat missions in an immersive 3-D virtual environment using their content-knowledge to save a future-world and medieval world, respectively (Sancho et al., 2009).

The traditional instruction used during the initial 2005-2006 and 2006-2007 academic years of the research period were contrasted with the *Mundo NUCLEO* instructional activities of

the 2007-2008 academic year and the *Mare Monstrum* instructional activities of the 2008-2009 academic year. The university used a voluntary approach during the 2007-2008 year that engaged sixty engineering students and 175 computer science students in an experimental design that divided them up into either a control group using traditional instructional methods or an experimental group that engaged students as online warriors in the immersive environment. During the following year, the research consisted only of 54 participants in the engineering school for whom use of the *Mare Monstrum* environment was mandatory (Sancho et al., 2009).

Although research during the two years of non-traditional instruction was heavily oriented towards examining issues of team formation and student satisfaction with peers, over 45% of students rated the immersive problem-based learning environment as satisfactory, while just over 45% rated it very satisfactory. Students' critiques of the team aspects of the approach, with just under 70% finding it satisfactory and 10% finding it very satisfactory, are heavily grounded in the instructor's choices to blend students on the basis of survey profiles exclusively rather than student choice. (Sancho et al., 2009).

Research data primarily focused on measures of student performance by team role and measures of satisfaction with the software architecture and team processes. One of its findings was that students performing in team captain roles had stronger marks and peer approval than those filling the role of knowledge integrators and communicators (Sancho et al., 2009). Such observation speaks to the possibility that problem-based learning that encourages legitimate and flexible participation in multiple leader-follower roles in a community of practice can maximize student engagement.

The researchers acknowledge the need for more long-term study to increase the value of their observations, but their quantitative findings during this period speak well for the value of

student excitement over traditional content being expressed in more interactive problem-based models. It offers a more quantitative insight into the powerful ways that technology can enhance peer-to-peer collaboration in problem-based learning.

The case for problem based learning in secondary education practice. Despite the aforementioned paucity of secondary use of problem based learning and the limited research that exists on its value, it is a model for teaching and learning which has been at the heart of several key educational reformers and visionaries on the primary and secondary level during the last century.

John Dewey (1998), Maria Montessori (Bagby & Sulak, 2009), and TheodoreSizer (Muncey & Mcquillan, 1993) have argued that students learn best when the classroom models the naturalistic way in which children learn language, physical control, and social rules and games. John Dewey defined during the first half of the 20th century an educational perspective that remained cutting edge sixty years later as massive educational reform efforts took place in secondary education. With the exception of programs labeled *inter-disciplinary* both secondary and higher education schedules place students in the position of examining specific content that is delineated by thematic, periodic, or geographic bounds. Whether for reasons of teacher certification or curricular design arguments, this boxing in of education is firmly counter to the vision that Dewey espoused in *Experience and Education*, over seventy years ago. While reflecting on the development and meaning of purpose, John Dewey offers the example of a baby observing a flame asserting that impulse and observation is of limited value if it fails to be paired with previous experiences, including an understanding of the consequence of action. Dewey goes on to define that intellectual activity in the classroom need rest on the postponement of overt action, until a foresight borne of “observation, information, and judgment” (Dewey, 1998,

pp. 79-81) is possible. His vision has inspired generations of primary and secondary educators to consider how students could learn by actually having the opportunity to do, make, and create.

A subset of primary educators was equally shaped by Maria Montessori's (Bagby & Sulak, 2009) vision of primary education and its naturalistic interdisciplinary ideals. Current primary school educators trained on the philosophies of Maria Montessori have taken a role in furthering research on the value of these teachings. In research from 2009, two Montessori private-school educators summarized their 60 hours of classroom footage, observations, and interviews with 16 participant students, their parents, and the teachers and teachers' assistants who worked with them. The teachers suggest that the Montessori cultural curriculum strand that blends disciplines often taught separately in other schools, provides students opportunity to receive facts in context and supports students making connections and linking previous knowledge (Bagby & Sulak, 2009).

During the last two decades of the 20th century, TheodoreSizer (Muncey & Mcquillan, 1993) reinvigorated the Montessori and Dewey arguments as he brought his expertise as a Harvard graduate education dean and headmaster at Phillips Academy to critique the state of public education in his writings. Based on educators' response to his critique and showcasing of their best practices, he developed the Coalition of Essential Schools at Brown University (Muncey & Mcquillan, 1993). Following his 1984 *Horace's Compromise*, Sizer continued to document the state of American public secondary education throughout the 1990s with *Horace's School and Horace's Hope*. In the process, he helped to define a nationwide education reform movement that came to encompass hundreds of schools and took the organization to its current status as a national non-profit organization that has developed these original ideas. The

movement spread— by 1996 the Coalition included “940 schools in 37 states and two foreign countries” (Goldberg, 1996, p. 685).

Drawing on the practical experiences of their member schools, the movement has defined 10 “Common Principles” (Coalition of Essential Schools, 2010, “Common Principles”) that argue for a “less is more” (para. 2) approach to schooling that privileges depth-based thematic courses that stress critical thinking skills; designs learning with a “student-as-worker, teacher-as-coach mentality” (para. 5); and suggests school classroom organization and administration that offers “democracy and equity” (para. 10) in the classroom and school community.

Like Dewey and Montessori before them,Sizer and his followers have promoted the idea of a classroom that he describes as essential and engage students in a process of inquiry (Muncey & Mcquillan, 1993). Among member schools, projects and exhibitions of student work are a norm. This focus on projects, however, does not necessarily mean that all of these schools embrace problem-based learning.

The earlier mentioned review of Montessori primary education cited the approach’s penchant for offering students “contextually rich learning opportunities” (Bagby & Sulak, 2009, p. 41) that “requires effortful processing of information” (p. 41) as generating a “depth of understanding” (p. 41) and having similarities to the “characteristics reported in the problem-solving research” (p. 41). In this finding, we find natural connections between the Dewey, Montessori, and Sizer vision and the pedagogical practices involved in integrating real world problems, and even technology and technical skills in these higher education settings through the use of PBL. We can see the value-added within the primary and secondary grade levels by these research and teaching methods. This approach speaks well to the technologies and their integration into the practices of teaching as it offers a model of studying situated learning. As

relevant as it is toward pedagogy, it also provides a solid medium in which teachers can be inspired to utilize such techniques and through which researchers can examine the ways in which problem-based learning and technology fit.

Problem based hands on learning in secondary classroom. Despite the conservatism and standardized testing focus present at the secondary level, experiments with integrating PBL and technology into the classroom have made it through. The actual traits of secondary students—developmentally adolescent, experience limited, and subject-content naïve— make them a challenging audience for PBL.

“Determining an appropriate problem for less skilled students requires that the problem designers understand what is developmentally appropriate, interesting to a heterogeneous group of students, and moderately challenging without being overwhelming” (Hmelo-Silver, 2004, p. 241). However, some individuals and groups have taken on this challenge of adapting problem-based learning for the secondary educational system.

The use of online technologies to support secondary social studies education was documented in a 2009 article investigating multimedia’s capacity to generate positive attitudes and increase interests in social studies. The GlobalEd project, a five-week unit embedded into social studies curriculum, had been running in iterations since 2001 and was the subject of three previous research articles looking at some of the technological, international, and academic issues. This version of the project engaged eight GlobalEd veteran teachers and two new instructors to engage 359 first-time participant students from ten middle schools in five states across the U.S. (Ioannou, Brown, Hannafin, & Boyer, 2009).

The researchers used a quasi-experimental design that consisted of pre and post-test assessments of knowledge, interest, and attitudes, and of which the participating teachers made

voluntary, leading to 190 of the participants being qualified research subjects. The study utilized a twenty-seven question multiple-choice test at the beginning and end of the program, with a six-question global environment sub-section that had a weaker than ideal Cronbach alpha for its pre-test and just over the suggested standard for the post-test. A six-question subscale on social studies interest organized on a five-point Likert scale was utilized showing a strong 0.85 alpha on the pre-assessment and 0.87 on the post-assessment). Post-simulation, participants asked to assess the instructional effectiveness of their online materials, using a seven-question subscale of five-point Likert items, which collectively showed a strong alpha of 0.88. (Ioannou et al., 2009).

The embedded unit was designed to engage up to 15 classes, each representing a foreign country, in a simulation of negotiation and communication around conflict, economics, environment, security, and human rights. Students within a class (country) were divided into groups that have specific responsibility for in-depth learning on their sub-issue, while still learning the substance of all issues for their country. They were tasked with the problem or challenge of negotiating a treaty with one or more classes/countries that addresses all five of the issues. The simulation's design engaged the issue-oriented sub-groups in cross-class (cross "national") communication through emailing and weekly conferencing (Ioannou et al., 2009).

To examine the role of multimedia, these subjects were assigned differential content to examine the global environment issues, with the 181 subjects comprising five of the teams have access to a web site with multimedia content while the remaining ten teams, with their 178 subjects, had only a text-based web site (Ioannou et al., 2009). Beginning three weeks before the unit and continuing throughout the five-week simulation, students were given access to a password-protected site specific to their condition group. The sites had counter codes and the text-only site provided a print-option.

The sites provided instructional supports to orient students to energy resources, global warming, and the politics involved in addressing energy issues. Repeated measures analysis of variance, RM-ANOVA, were used to provide a more detailed review of participant performance among the text and multimedia global environment sub-groups and among the non-global environment participants in both groups who indicated they voluntarily spent a lot of time visiting the subject matter on the web (Ioannou et al., 2009). The researcher's findings indicate that the multimedia group had marginally larger gains in knowledge and interest and used the web content more extensively. Several issues not accounted for in the methodology explain possible errors. In their own discussion of the findings, the researchers acknowledge that the limited size of the sample may have created a Type II error, obscure significance even though it may have existed. They also admit that despite random assignment of students, multimedia participants averaged higher baseline social studies interest—therefore creating a ceiling of increase (Ioannou et al., 2009). Additionally, the fact that teachers printed the text-only site to support students also potentially contributed to less online usage.

The researchers failed to take account of their survey subjects being majority white, with ninety percent having home computing and Internet access, and over 40% accessing news via the Internet, and a majority watching local or national news at times. One might question the degree of impact that routine multimedia Internet access may fully have on participants being fully engaged by this simulation model. The designers of the GlobalEd approach have met some, but not all, of the challenges predicted by Hmelo-Silver (2004) in adapting problem-based learning for a secondary audience.

The integration of problem-based learning and technology is not, however, exclusively a phenomenon of western learning environments. Singapore has been the site of recent research

to examine the integration of these strategies into the secondary classroom to promote higher order thinking. Researchers examined student-learning outcomes between two successive groups of fourteen year-old students in the same teacher's core geography class at the National University of Singapore High School of Mathematics and Science (NUS High School).

The quasi-experimental design was generated in response to limitations of school physical plant and scheduling which prevented random assignment to conditions. The researchers further built the research project in successive administrations of this course during the school years of 2007 and 2008 citing a desire to avoid "diffusion of treatment" (Liu, Bui, Chang, & Lossman, 2010, p. 152) potential data bias due to the Hawthorne effect, and to sidestep parental or student jealousy around another model of instructional delivery with perceived benefits being offered.

The twenty-five students who participated in the control group and the twenty-four students from the experimental group were engaged in a series of three problem-based learning activities that moved from heavy scaffolding to a more minimal scaffold, with increasingly ill-structured problems. The assessments of the student reports on these PBL tasks were informed by a five out of seven questions on a pretest diagnostic that looked at existing geography skills. The research placed its focus on two areas—initially on determining if the above sources documented student increases in higher order thinking and, if so, using audio/video interviews, field notes, and participant interviews to assess how this thinking was promoted (Liu et al., 2010). The researchers utilized learning theories on the classification of student thinking to define the cognitive skills to recall, understand, apply, analyze, evaluate, and create.

Although pretesting data showed little observable evaluation and creation skills, the mean performance for both control and experimental groups in all areas except the category named to

apply, lacked significant difference at a level of $p < 0.05$ as confirmed by a sample student's t-test (Liu et al., 2010, p. 155-7). Despite the control and experimental groups being similar, significant differences at the $p < 0.05$ level were found in all cognitive skills on the post-treatment assessment—with control group students averaging showing the majority of their skill in the area of recall, while the experimental group show their greatest strength in their ability to analyze with an average of three times more skill strength in evaluating (Liu et al., 2010). These findings are intriguing in part because neither group was deprived of problem-based learning. These results seem most applicable to our current research efforts precisely because they offer a way to view the value of infusing technology into the secondary PBL classroom. These quantitative findings showcase the strength in activating PBL's idealized capacity to raise students to greater levels of analytic capability.

Although PBL medical students faced with diagnostic explanation tasks on practicum were found to have more factual errors in their explanations, they are documented as demonstrating “more elaborated” (Hmelo-Silver, 2004, p. 250) explanations, evidencing a well-developed knowledge structure, and thereby showing stronger self-correcting capabilities. Seeing the infusion of technology into the classroom with these students in Singapore, help us see the potential bridge over the academic and developmental challenges of the secondary PBL classroom.

We do not have a clear enough picture of the Singapore research's demographics. Although Singapore's national demographics include a diversity of language and a large percentage of foreign-born residents, the racial and linguistic diversity is not broken down in the researcher's 2010 *Journal of Geography* documentation. We are provided only with information that the school is a “specialized, independent high school” (Liu et al., 2010, p. 151). Although

the study provides the additional quantitative understanding of methods to maximize the effectiveness of PBL and technology in the secondary classroom, it does not clearly address the issue of student diversity present in many United States urban public schools.

The attention to race and socio-economics was more central in the research of Kolodner and the Learning by Design (LBD) team who examined what went into bringing the best of project-based learning into the middle-school science classroom. As a centerpiece to the research article, they highlighted the amalgam of best practice pedagogy provided in their *Vehicles in Motion* eight-week unit that assigns students as a research team consulting on the design of Antarctic exploration vehicles. Researchers measured pre- and post- test changes by combining written, objective tests to examine content knowledge and video-taped assessments of groups of four for a performance-assessment of collaborative science methodological skill. Performance-based assessment findings from the 1999-2000 and the 2000-2001 research identifies change in mixed-achievement LBD groups during the curriculum that supports their demonstration of experimental design and science methodological to match non-LBD honors students (Kolodner et al., 2003).

The National Science Foundation, McDonnell Foundation, and BellSouth Foundation funded research allowed the LBD team to tackle and analyze earth science and physical science through a process that paired preliminary content *launch* units introducing key concepts around scientific collaborative problem solving and then used thematic units engaged the students in multiple cycles of design-redesign with pauses for collaborative assessment. The 2003 research article by Kolodner et al. uses ethnographic observation to collect data that they analyzed as they vetted *Vehicles* and their Apollo 13 launch unit through piloting and field testing between 1998 and the article's publication. They found gains in science content learning amongst LBD

participants when contrasted with comparison classes. They also noted that from pre to post test, LBD subjects with the most socio-economic limitations experienced the largest gains. They additionally noted that girls participating in the 1998-1999 LBD research moved from lower pre-test performance to equal or better performance than the male participants (Kolodner et al., 2003).

The article extensively broke down the design development process leading to translating existing learning theories that prized transfer into a model strongly applicable to maximizing middle school science instruction. Their trademarked model is described as having been evaluated positively by twenty-four teachers and three thousand five hundred students, and having been “refined using a trial, analysis, and refinement approach” (Kolodner et al., 2003, p 497). The LBD model has packed half-year units of practice-based learning into a series of physical science building tasks (parachutes, cars, propulsion systems, and disability lifts) and earth science tasks (modeling a strategy for stopping hill erosion and building a model and strategic plan for executing underground transportation tunnels).

Drawing on the pre-experimentation with parachuting that followed the pre-unit launch *Apollo 13* viewing, the *Vehicles* unit provided students an opportunity for testing solutions, and engages them in three small design challenge opportunities each requiring multiple iterative design processes and reflection (Kolodner et al., 2003). The article details the mini-challenge involving propelling the balloon and explores how students were able to gain hands-on design experience and communal learning through museum-style viewing of each other’s work and pin-up sessions on the community whiteboard as their instructor gained a robust picture of students’ misconceptions. The LBD curricular vision credited the deep communal understanding serves to

support participation in a “grand challenge” (Kolodner et al., 2003, p. 526) through which students demonstrated their working model vehicle.

Kolodner et al. (2004) outline the specialized needs that arose in adapting techniques that functioned well in higher education settings to scaffold middle school students to develop a range of low to high science reasoning learning everything from measuring to differentiating observation, evidence, and theory. They reviewed multiple theories of design, building, communities of learning, strategies of learning for transfer, and the cognitive apprenticeship that inspired their LBD model. The LBD team brought together case-based learning’s iterative design and reflection process and problem-based learning’s communal reflection supplementing what students could do in small groups iteratively and through individual diary work documenting their designs; they blended sequences of whole-class learning (Kolodner et al., 2003). This created opportunities to introduce new content regarding how and why things work, reflect carefully and methodically during the design process, allow groups to compare and contrast ideas during their design iterations, and support instructor and self-assessment for individuals following design and investigations (Kolodner et al., 2003).

For all the success that the LBD team retells in their lengthy review of conceptual underpinnings, they save for the end a caveat that their ability to synthesize the best practice of learning transfer still only served as leaving the need for further practice investigation to determine what consistent practice efforts are required. The warning provides us a valuable understanding of how far they feel the data takes their research. For our purposes, however, we can take several additional things from the research.

We can understand the value of PBL in a diverse middle or high school classroom by noting the performance jumps Kolodner et al. (2003) report in their early research. Increasing

academic performance among heterogeneous groups is most linked to the core of our research efforts. In addition, the LBD project sought to elaborate on their conceptual underpinnings and prize the value of design both in their students' activities and their own curricular development process. The attention that the LBD team gave to their discussion of the design process, inspires the value of being design-oriented in one's approach to research.

Situating mobile & social media in problem-based learning. Mishra and Koehler (2006) define technological pedagogical knowledge as understanding the “existence, components, and capabilities of various technologies” (p. 1028) as applied in the learning and teaching process with an implicit understanding of how the use of these technologies impact teaching—understanding technological tools and their fitness for the teaching tasks at hand

We see an examination of this discipline-specific application of appropriate technologies when we look at some research contemporary to Mishra and Koehler's (2006) that looked at handheld technologies usage in the secondary classroom. Working with 7-year teaching veteran, researchers examined the integration of the University of Michigan Artemis Middle Years Digital Library and the MIT Media Laboratory's Thinking Tags in a high-poverty majority low-performing eighth grade class of 33 students at a Midwestern urban middle school (Hug, Krajcik, & Marx, 2005).

The technology under their scrutiny offered a way to increase students' engagement and exploration of an existing biology content unit that focused on the ways in which friends can pass communicable and sexually transmitted disease. The technology selected included a database program of science content that would assist students in targeted searching for their disease investigations, while the handheld programmable objects allowed for a pedagogically student-centered experience. The open-ended activities with the handhelds created opportunity

for students to come to understand scientific method, disease tracking concepts, and critical problem solving as they explored the programmability and data logs of the devices themselves. In these ways we again see the ideals of these intersections as the researchers assert that “these technologies allowed students to ask questions that connected the unit science content and real life to the investigations and technology used” (Hug et al., 2005, p. 460). It is in this that we see the intersection of technology and pedagogy— the ways in which learning techniques and learning technologies come to mutually impact on each other.

Citing its resonance with urban reform efforts, this study prides itself of being the first to put Artemis through research in an urban environment. Researchers described the findings as increasing the “understanding of how to design instructional materials using innovative learning technologies in urban schools” (Hug et al., 2005, p. 449) providing students with “a meaningful manner” (p. 449) to use the technology. Shulman would be happy that we are talking about the teacher and student experience of understanding discipline-specific questions and protocols.

Researchers coded and reduced behaviors they witnessed on the classroom footage and student interviews to assess the value of efforts made during their inquiry, along with looking at the artifacts of their unit project work (Hug et al., 2005). Although the ten hours of classroom footage and running interviews of ten students provided limited content, the researchers found cues in the video and student work that showcased levels of engagement with the technologies (Hug et al., 2005).

The coding was aligned to the strands of science inquiry proposed by educational reform efforts, and documented multiple areas of science discipline practice supported by students’ use of the handheld technology. The Artemis database allowed students to develop and refine their investigative process and dialogue with classmates. Thinking Tags created hands on

opportunities to pose questions about the nature of investigations, and apply them across multiple investigation efforts, using self within the intellectual problem-solving reflect high levels of engagement (Hug et al., 2005).

This research fits into the realm of the Mishra and Koehler (2006) concepts in the way it speaks to the thought-provoking ways in which technologies can affect, inspire, or fuel innovative teaching methods. Although other researchers and critics have sometimes focused exclusively on the affordances of the technology itself as a powerful tool, this research affirms the ways in which technology placed in the hands of students can set off a complex interplay that alters learning.

The research of Hug et al. (2005) is also interesting in our exploration of teaching and learning with technology because it grounds itself in a pedagogical model particularly apt to this form of research—problem based learning. In Hug’s research, the teachers presented students with open-ended problems for which they were able to experiment with technology usage, tapping the technology across multiple exploratory iterations. With these mobile technology examples, we see the value-added with educational technologies when there is some conscious interaction between technology and pedagogical process. The technology in these examples really walks the walk and talks the talk of hands-on problem based learning. Unlike the WebQuests described earlier which construct and constrict the students’ learning experience, these students have engaged in science-based problem solving that included the hands-on exploration of technological tools that brought on their own problem-solving experience.

Technological Content Knowledge

Teaching history and studying socially. According to Mishra and Koehler’s (2006) conception, the ties between technology and more richly thought out pedagogical practices is not

the only relationship at which we can examine. They point to the intersection of technology and content knowledge as another area ripe for thoughtful examination. In this case, we need to ask ourselves what have technology experiments in social studies classrooms really taught us about government, economics, and history— what does teaching social studies with technology look like?

At a southeastern high school of approximately 1,250 with 97-minute social studies blocks and five networked computers in each classroom, a research team used design-based research to fine-tune previous research by the team in 1999, exploring how PBL, technology and history increased students' to understand the emotional depth behind the historical dilemmas and their hands-on engagement with content material as opposed to expository strategies (Saye & Brush, 2002). Their follow-up research documented a two-stage design problem investigation of an 18-year veteran teacher's use of the Decision Point (DP) hypermedia application to enhance her 11th grade U.S. history classes. The first year of research followed the instructor's experimental experience implementing PBL and DP in one section, while maintaining her previous traditional explanatory instructional approach in the other and established engagement benefits with the DP approach. The second year examined the same teacher's implementation of a fine-tuned DP assignment with a single section of 18 non-honors students mandated to the course, and the research focused on defining curricular scaffolds to maximize the discipline-specific content (Saye & Brush, 2002).

Citing a limited literature that dually researches student-centered social studies and technology infusion, the researchers sought to clarify the benefits and proper implementation of technology-infused PBL. In the DP sections, the technology offered a database of essay, timeline, and primary source documents through which students were exposed to civil rights

content on the legal challenges to segregation, non-violent protest, and Black Power activism between 1954-1968; the teacher developed day-to-day curriculum within a unit plan and assigned students a project-based assessment requiring they develop an evidence-grounded presentation answering, “What strategies should be pursued in 1968 to continue the struggle for a more just, equal society?” (Saye & Brush, 2002, pp. 80-81). Unlike the WebQuests described earlier that construct an electronic age book report, this complex question asked students engage in the history disciplinary tasks of synthesizing evidence to take a position and analyze a series of historical events.

Through using a seven-standard rubric to evaluate the product of student group presentations in each section during year one, the teacher and researchers gained valuable insight showcasing student engagement but reflecting content weakness. This allowed a more finely tuned exploration during year two to discover the scaffolding required to support technology infused student-centered learning (Saye & Brush, 2002); researchers combined interviews of one-third of the section, with triangulated data drawn from their review of the logs of student pathway exploration in the database, their observation of classroom sessions, and their rubric-guided analysis of group presentations (Saye & Brush, 2002).

The end result following through multiple iterations of a problem design within one setting, according to the researchers supports an increased understanding of problem-based learning curricular development despite its inability to provide generalizations about such instruction (Saye & Brush, 2002). For the instructor and researchers involved, the progressive iterations clarified the instructional adjustments of cooperative group monitoring, teacher-led comparison of findings, and mandatory group storyboarding. The rubric-based assessment of final group presentations showcased that after these pedagogical tweaks, three out of four student

groups demonstrated increased social studies abilities to develop a clear narrative and gather, interpret, and synthesize evidence while two out of the four had demonstrated increased ability to reason with evidence (Saye & Brush, 2002). The findings are practice-relevant not because they prescribe a sure-fire route for increasing student content-area performance, but because they direct an instructor to areas of potential concern and development in tackling an instructional focused design problem. Although the study uses the overarching lens of examining the multiple interactions in TPACK, it gives specific value to the understanding that the technological content knowledge is an important dimension. It also showcases that researchers and educators can improve the content-richness of the experience by engaging with technology in an iterative way, and reading the signs from students' initial exposure. To have pedagogical initiatives and units available for such explorations, however, an instructor needed to engage in an initial process of curricular design. In the *Decision Point* research there were multiple points at which pedagogical design choices were made to challenge students with historical dilemmas or scenarios, to ground assessment with history-skill oriented rubrics, or to scaffold student group work through formal process of supportive materials.

Other research has examined the ways in which technology has supported contemporary goals of engaging students in historical inquiry by providing them access to participate in “digital history” (Manfra & Hammond, 2008, p. 224) which brings students into the role of manipulating electronic primary source artifacts, texts, and images to develop a cohesive historical narrative. The researchers chose to study two teachers—one who had been observed as part of a larger study for twenty-four days during a semester and the other who had been observed during the three days of his participation with digital documentary making.

The investigators looked at one teacher's work with several seventh grade classes of different racial combinations and another teacher's work with a primarily African-American class, both in urban Virginia, examining student documentary products, the teacher handouts, focus groups, field notes, and semi-structured interviews hoping to develop a context rich impression of how teachers' pedagogical aims, technology, and content fit together (Manfra & Hammond, 2008).

The researchers frame their examination through the teachers' pedagogical aims—that is Mr. Smith's vision of prepping for the test and making content more alive contrasted with Mr. Maxwell's goal of students developing multiple perspectives and “create their own interpretation of the past” (Manfra & Hammond, 2008, p. 230) building on a specific critical thinking model. They approached TPACK-lens analysis from a pedagogical perspective and asserted that teacher pedagogical aim is a dominating influence on outcome despite not being the sole steering element (Manfra & Hammond, 2008). While pointing out the ability of a teachers' values around what's educationally valuable to shape the students' history skills education, they actually end up pointing out a challenge in the marriage between technology and content— that certain forms of technology do not, in and of themselves, lead a student to a specific kind of content knowledge. That is to say, that despite the affordance that free online movie-making software brings to documentary film—the documentary process will not make the student a historian. Content is at some deep level, often disconnected from the very outside activities in which they would have professional substance and meaning.

According to some in the field, social studies learning activities take many forms, distinguish among social studies activities that: build knowledge through students interaction with information sources; that ask students to express convergent knowledge through a singular

common mode of expression; or that urge the development of divergent knowledge expressed individually by students through either written, visual, conceptual, product, or participatory action (Harris & Hofer, 2009). While some may talk about the bent that the teachers' values about teaching and learning played within their choice of activities, one can argue that these men were not teaching social studies in a vacuum—they were teaching in a traditional high school classroom which, by the researchers own admission, were both fairly focused on the Virginia state standards and testing preparation.

In many ways, a traditional content field in secondary education is often shaped and defined by the belief in acceptable forms of classroom activities. After all, while an ideal progressive vision would be for social studies students to get opportunities to serve as historians, to act as economists, to participate in politics, we must acknowledge that many classroom experiences find themselves fighting the limits of classroom content as defined by a district or state office.

Some that seek to integrate technology, however, struggle from the actual limits of general-purpose technology to adequately capture content-specific knowledge and practices. In a Spring 2009 semester study at a northeastern university, blogs were integrated into a graduate-level teacher education course that used content around the Holocaust to spur dialogue on critical pedagogical exploration of multicultural literacy education (Stevens & Brown, 2011). From thirteen participants in the course, the researchers drilled down into a qualitative dual case study that examined how two educators with similar educational backgrounds experienced the course. Although the cases showcased some critical thinking around the issues, it also showcased difference among the subject-point perspectives of the two learners. The researchers own action research take-away was that more student-control of topic was needed to actually motivate the

learners to study other genocides as points of connection, and that more explicit blog prompts were needed to bring students to uniformly higher levels of complexity in their writing (Stevens & Brown, 2011).

Similar concerns around the fit of content and technology were raised in research on with 8 ninth grade teachers from high school classrooms in seven schools across a south central state. The researchers recruited teachers interested in implementing a podcasting project into their social studies economics curriculum, introduced them to the use of the free application Audacity, and conducted an analysis of the teachers project plans, post-implementation interview transcripts, observation notes, and pre and post implementation surveys (Swan & Hofer, 2011).

One of the distinctive findings of the research was that it had locked teachers into a specific technology but given no limitations around content choice. The researchers' findings were that none of the teachers had developed a clearly described explanation of their choices for selecting specific economics content or the timing of where in the course the project came up and that this was the biggest determinant for specific content coverage (Swan & Hofer, 2011). The researchers point out that only two of the teachers actually had training in economics, and suggest that the flaw is that the "general usage" (Swan & Hofer, 2011, p. 90) nature of podcasting and similar communication tools help students with general expression but fail to develop content-specific skills—that is "students can express their thinking through podcasting, but it won't help them think like an economist" (p. 90). They assert that the technologies most suited for social studies specific content like Google Earth, the *CIA World Factbook*, and web-based digital archives are not tailored for classroom usage (Swan & Hofer, 2011). The emergent theme in their research is that the more content-specific technologies demand teacher expertise

and a student learning curve that is more complex than the general usage software that has gained popularity.

Civic participation as a form of social studies and social engagement. So how can teachers incorporate problem based learning and technology to energize a civic participation in social studies? During the last twenty years, public interest has been particularly concerned with linking community involvement and the quality of life. Robert Putnam refers to a diverse set of “empirical evidence” (Putnam, 1995, p.65) from social scientists that suggest social institutions’ ability to function and the high quality of public life are closely connected to “norms and networks of civic engagement” and intrinsically tied to the “role of social networks” (p. 65).

Researcher Thomas Ehrlich (2000), has engaged in collaborative work to reviewing the state of civic engagement activities at higher educational institutions, including Oregon State University, Michigan State University, and Portland State University. While assessing existing programs they have also expressed a commitment “seeking to encourage colleagues and universities to strengthen those programs” (Ehrlich, 2000, p. vii). These researchers edited a collection of essays that developed from an American Council of Education sponsored conference. Within this text Ehrlich drew on his previous experience researching the topic, and defined civic engagement as “working to make a difference in the civic life of our communities and developing the combination of knowledge, skills, values, and motivation that make that difference” (Ehrlich, 2000, p. vi).

The relevant skills that require development to support this “work with public purpose” are “the arts of public argument, civic imagination, the ability to evaluate information critically, the curiosity to listen constantly, interest in public affairs, and the ability to work with others different from ourselves on projects that recognize multiple contributions” (Boyte & Kari, 2000,

p. 51). The authors elaborated on these skills while unpacking the then-recent “Wingspread Declaration” of higher education leaders and the Campus Compact issued at a presidents’ meeting. Ironically, these skills are very much aligned to the Habits of Mind approach embraced by the Coalition of Essential Schools and the Common Core State Standards that are now espoused as a national standard.

While commenting on a 1997 study of Debra Humphreys’ then three-year-old review assessing general education programs at “nearly 100 two- and four-year colleges,” C.G. Schneider (2010) suggests that although grounded in “the aspirations to justice, equity, and democratic accountability that are both central to American history and yet only partially achieved,” the courses do not engage critical analysis of “the value of equality itself” (p. 119). This highlights the challenge of capturing a rich exploration of civics without actually engaging students in the civic participation.

The Carnegie Corporation of New York and The Center for Information and Research on Civic Learning and Engagement (CIRCLE) 2003 report on “The Civic Mission of Schools,” advocate for this education to first occur in primary and secondary education, asserting it is vital for several reasons: research suggesting that social responsibility and politics interests develop prior to age 9; the cognitive linkage between “critical thinking and deliberation” (Gibson & Levine, 2003, p. 12) skills and the content knowledge associated with civics and politics; the heterogeneous deliberative and interactive climate of schools; the presence of caring adults who served as mentors; the mandatory requirements around participation in schools; and the relative disappearance of large-scale institutions outside of schools that might provide these engagement opportunities for youth (Gibson & Levine, 2003). This report drew together the writing and discussion viewpoints of fifty-seven non-profit, municipal, educational, and cultural institutional

leaders in the social studies, higher education, educational administration, curricular, research, and civic education study fields from local and national level organizations.

Other researchers who have done hands-on fieldwork around civics courses in the secondary curriculum share the view that innovative high school civics efforts are urgently needed now (Daly, Devlin-Scherer, Burroughs & McCartan, 2010; Dávila & Mora, 2007; Hutchens & Eveland, 2009; Kahne & Sporte, 2008; Kahne, Chi, & Middaugh, 2006; McIntosh, Berman, & Youniss, 2010; Phillips, 2004; Rubin, Hayes, & Benson, 2009).

Using a quasi-experimental design, a research team examined the implementation of the Constitutional Rights Foundation's *Cityworks* curriculum at both urban and suburban schools. By examining six teachers from five Los Angeles area schools, looking at the experiences of 231 students with pre- and post-surveys, and utilizing some teachers who also had U.S. government classes not utilizing the curriculum, the researchers were able to contrast control classrooms (77 students) to their experimental group (154 students) and compare the experiences (Kahne et al., 2006).

Through examining students' agreement on items focusing on norms of political and civic engagement, awareness of social networks in this arena, and trust in institutions, the researchers identified gains among students who participated in the civics curriculum around the survey's measures of participatory citizenship and justice oriented citizenship at a p -value of less than 5% and personally responsible citizenship and knowledge of social networks at a p -value of less than 10% (Kahne et al., 2006).

In the researchers' closer look at each classroom they saw ways in which teachers' execution impacted the outcome and found connections among the researched measures and the curriculum's techniques of simulations, service projects, and exposure to role models, promoting

an overall reason to believe that an experiential hands-on civics curriculum has value for improving measures of civic engagement (Kahne et al., 2006).

Researchers have examined the effect of civics action projects on secondary classrooms, in one case using Project Citizen. This Center for Civic Education program was implemented over a two-year period by groups of second-year teacher education students in their final semester. These twenty-four teachers in year one from all subject content disciplines were assessed for their awareness of public policy and for their conceptions about urban education, through a pre-intervention survey. They then had the opportunity to share their experiences after the program through both surveys and focus groups (Daly et al., 2010). Year two teacher education participants were assigned to work with a single teacher that had curricular experience with this program and benefitted from organizational and scheduling efforts that had not been present during year one.

Previous research cited to S. Root and J. Northrup established the value of Project Citizen to assist secondary students with their persuasive writing skills, civic literacy, and civic development. Daly's team had discovered during year one positive feedback only through the focus group, where the teaching students indicated that they had learned aspects of public policy by helping secondary students with their portfolios for the action project. During the more organized year two, they had discovered on both the surveys and focus groups that the teacher education students felt that whole interdisciplinary approach in Project Citizen educated them on policy, and their secondary students on "active citizenship" (Daly et al., 2010, p. 126).

The researchers' population was limited to a group of less than fifty teacher education students at one university. The qualitative feedback from the research, however, still suggests

that prospective teachers identify valuable gains in civics knowledge and participation from project-based learning activities.

Within the racially diverse Columbus Public School district, representing an urban area of nearly three-quarters of a million citizens in Ohio, researchers conducted a longitudinal study one year after students were exposed to a civics curriculum using multi-level modeling to examine connections between social communication learning activities and traditional memorization of civics details and the schools, courses, and teachers.

The researchers engaged social studies teachers across the district to complete surveys, using district-level information on the students in classes of the 67 respondent teachers to set up student and parent surveys. One year later the researchers brought the original 202 student response up to 896, reengaging non-responders as well as the original group—by the use of \$7 stipends and a local research firm. The study ultimately found that neither approach supported increased civic participation among these students, but that teachers, schools, and specific course differences did have impact on the students and their content knowledge and participation. (Hutchens & Eveland, 2009).

The details of the research suggest many flaws with its teacher-driven approach to reporting of classroom activities and its relatively small sampling population relative to all students who participated in the social studies courses. What is interesting, however, about this study is two factors it evidences.

First, it indicates that the nature of environments in which the learning activities takes place have an effect on the student learning experience. The implication is that recognition must be paid to teacher and course design differences. One might view this as debunking the idea that

a one-size-fits-all curriculum model can exist in a vacuum. This supports the need for teachers to take a conscious and conscientious role in customizing civics curricula.

Second, it suggests that race and socio-economic factors contribute to the civic engagement values that students hold. This implication has been studied by other researchers, including one interpretive study follow-up that looked in detail at the implementation of a problem-based curriculum previously offered in a U.S. history high school course at the 1,314-student Surrey High School. The school's population is 98% non-white and the participating teacher is an African-American male teacher residing in the school's community, applying his four years of experience to a highly mobile population of special needs students. Its primary findings identify a "disjuncture [that shows] a contrast between the civic ideals of the United States and students' daily lives" (Rubin et al., 2009, p. 215).

Although the study was limited in its size and scope, it provides percentage data on the students' self-reporting of whether they felt their neighborhood or school was safe, or whether they had any faith or trust in government. In response to multiple questions, nearly 9 out of 10 students had experienced prejudicial police behavior, witnessed community violence, and felt a strong sense of societal injustice. However, over 9 out of 10 students also indicated that they would volunteer to help those in need in their community and would work with community-based groups to solve problems. Students anecdotally reported that they learned more in this teacher's social studies course due to their extensive writing and reflective opportunities on their own sense of identity and experience (Rubin, et al., 2009, p. 217). The implications of this study on research at the school site are two-fold. First, quantitative details suggest that students' own disconnection from American ideals do not necessarily present a conflict to student participation in civic community-based activities. Second, the nature of this study suggests that when given

the opportunity to reflect on their own sense of identity in relation to notions of both real and ideal American communities, that they are able to engage with civics material and draw robust conclusions.

The impact of participation and deliberation around student governance were the subject of a recent working paper that reviewed research data that was collected beginning in 2003 to establish a five-year evaluation of Hudson High School's efforts in that arena. The school's newly built space created opportunities for these clusters and their adult staff support teams to come together and democratically run the clusters through weekly one-hour meetings. They had developed clustering programs that allowed groups 100-150 members of its diverse 1,000 member student body to connect around common bonds of academic themes like "communications, media, and the arts...business, engineering, and technology" (McIntosh et al., 2010, p. 4).

Annual senior data was compared to an initial senior baseline to examine students' behavior, skills and attitudes. A two-year cohort was followed through their four years in the school. Researchers used a combo of teacher and alumni surveys, senior focus groups, district staff members, interviews with successful students, and graduates municipal voting data to conduct both qualitative analyses of the focus groups and quantitative analysis of students' municipal involvement. Despite the relative chaos of the school clusters' attempts at governance with ill-defined supports, professional development, or boundaries, the quantitative data shows student gains in community service/participation within the school, political knowledge, and slightly increased community concern, despite decreases in the sense of social tolerance, freedom to speak, and believe in the school's efficient governance. Qualitative data has documented the growth of student affinity groups to mediate the failures of governance occurring during the

larger cluster municipal style plenary (McIntosh et al., 2010). This study offers an interesting perspective that engaging systemic initiatives within a school community can foster systemic increases in student understanding and involvement in civic participation. Students tasked with actual participation in governance activities gained a rich understanding of the ups and downs of politics even when their own political aspirations failed to achieve desired goals. They learned through the process of trying to effect change.

One dissertation study at Yale University engaged 260 juniors and 207 seniors in the non-magnet program at Long Beach Polytechnic High School in two field experiments regarding increased practice activities in local politics and increased participation in school-based extracurricular activities qualifying them as service learning, and sought to use “culturally-sensitive” (Phillips, 2004, p. 2) measures looked at “whether these activities actual affect civic knowledge, attitudes, and behaviors” (p. 2). The executive summary of the data asserted that the data finds a relative lack of impact from role-plays and simple problem-based activities in effecting change with inner-city students around civic participation issues like voting. He also expands the notion of civic participation, and identifies that a large population of students express more extensive civic ties and involvement in religious and ethnic associations within the urban community (Phillips, 2004).

In the Yale study, nearly one-third of the students were found to have been heterogeneous in their involvement ethnicity organizations beyond their own identity (Phillips, 2004). This portends the power of voyaging outside the school’s doors to connect students with larger more diverse constituencies and sets of politics, dissimilar to their own.

Many of the research studies of civic engagement take their focus on intervention at individual or small groups of schools within a district. In a larger-scale examination of 52

schools in Chicago and their 4,057 students, the team of Joseph Kahne and Susan Sporte (2008) utilize a dataset developed by the Consortium on Chicago School Research and administered in the school system and investigated students who participated in the 2003 administration as freshman and the 2005 administration as juniors. The researchers used indicators that offered single-item responses on a four-point Likert-style scale and also used multi-item measures that were analyzed with Rasch modeling in an effort to create exploration of specific issues of interest to the researchers and having a grounded relationship to those sets of items (Kahne & Sporte, 2008).

They study concentrates on community-based forms of participation over traditional forms participation in political activities. Researchers attempt to draw on previous research models that connect individual agency, social relatedness, and political-moral understanding. Through investigating the teens' membership in a group, teacher caring, and peer support they try to examine students' increased civic participation as defined by a five-item measure that asks student likelihood to work on community-based activities, programs, and projects, while seeing them and their community's improvement as central to their responsibility. (Kahne & Sporte, 2008).

In an effort to isolate the impacts of group and community factors, the researchers also used hierarchical linear modeling, but found themselves unable to apply a theoretical or operational approach that would successfully take the data set they actually had and allow for a classroom-by-classroom analysis. (Kahne & Sporte, 2008).

Ultimately, in their examination of various characteristics they found that demographic differences among students explained little variation in civic participation, while upbringing in a community filled with civic participation and social capital did impact students' civic

participation. Supportive peers and sense of belonging at school did contribute positively toward civic participation as did non-sports extracurricular participation. Most importantly, the 0.26 variance explained by service learning opportunities and the 0.41 of classroom civic learning opportunities that involved providing students the space to analyze current events, debate controversial issues, tackle community problems, connect with civic role models, and address issues of personal importance, were defined by the researchers as the most powerful of the study's findings. They emphasized the power of students' experiencing social capital (Kahne & Sporte, 2008).

The study reaffirms the value of dialogue, written self-reflection, and assignments that require students to go out into the community. Collectively, the research on assessing civic engagement suggests that interviews and interactions with role models, opportunities to directly participate in governance at the school and community level, dialogues within classroom structures to address meaningful issues, and reflection on individual identity all contribute to a rich understanding of civics.

Technology, social media and civic engagement. As a 2009 MacArthur Foundation funded research initiative sought to shift dialogue away from questions of youth access and the digital divide and proposed a working framework for viewing new media literacies, it engaged the important question of exactly what skills might be delineated. It proposed a collection of eleven skills informed by traditional literacy and research, technical, and critical-analysis skills, namely: play, performance, simulation, appropriation, multitasking, distributed cognition, negotiation, judgment, transmedia navigation, networking, and collective intelligence (Jenkins et al., 2009). Many of the skills speak to the new internal cognitive processes an individual must adapt to prepare intellectually, emotionally, and creatively for communicating amidst online media.

The final three skills speak to the tasks particularly key to an individual finding success in the interactive parts of their civic participation. Transmedia navigation speaking to the individual's efforts to "follow the flow" (Jenkins et al., 2009, p. xiv) as they engage "multiple modalities" (p. xiv). Networking speaks to their synthesis and sharing of the information, and the collective intelligence speaks to their ability to "gather online to embrace common enterprises" (p. xiv) in the "socialized or communalized media that is central to the culture of media convergence" (p. xiv). Beyond suggesting strengths that a student might develop, these three skill-sets provide a means of assessing students on the qualitative aspects of their participation.

This research project draws on Henry Jenkins' proposed fields within its own research tools, by including these three dimensions as part of rubrics used to assess instructional activities and instructional rigor. Jenkins speaks to the application of these skills throughout his 2006 white paper on civic participation and adolescents. He illustrates collective intelligence by remarking that "as players learn to work and play in such knowledge cultures, they come to think of problem solving as an exercise in teamwork" (Jenkins, 2006, pp. 39-40).

Jenkins applauds geographically disparate schools in studying common problems and sharing their data collection as a demonstration of collective intelligence as "Such knowledge communities can confront problems of greater scale and complexity than any given student might be able to handle" (Jenkins, 2006, pp. 42-43). He further clarifies that students in civics classes might use "a Wikipedia-like program" (pp. 42-43) to share reports on politicians, government meetings, policy debates, and public goings-on to allow for a dialogue amongst youth across the country to better allow them to understand local political events.

With transmedia navigation, Jenkins notes Ito's (2003) recognition of the "hypersociability" (Jenkins, 2006, p. 47) that emerges as youth trade notes and artifacts from their favorite transmedia television shows; he also notes findings about youth's following of character iconography, particularly Spider-Man, across film, television, video game, comic, and toys (2006). Where Jenkins' conception contributes to this research project is in his clarification offered a page or two later, where he indicates that "students learn about multimodality and transmedia navigation when they take time to focus on how stories change as they move across different contexts of production" (pp. 48-49); he goes on to share about an MIT New Media Literacies project that engaged students to tell stories across IM, Powerpoint, video, and drawing, analyzing tool affordances and identifying what threads they kept common for viewer accessibility (2006).

Perhaps the literacy on the list which most resonates with civic participation is the networking literacy which is described as a student's ability to successfully navigate amidst the constantly transforming informational world by successfully tapping into Web 2.0 and social media Google (<http://google.com>), Amazon (<http://amazon.com>), Del.icio.us (<http://Del.icio.us>), Facebook (<http://facebook.com>), Twitter (<http://twitter.com>), etc.), recognizing the biases, and successfully deciding whose informational resources are to be trusted and corralled into official research and change efforts. Put simply, "If transmedia navigation involves learning to understand the relations between different media systems, networking involves the ability to navigate across different social communities" (Jenkins, 2006, p. 50). He describes elementary students' efforts with online newspapers and podcasting as tools for sharing their work and high school students' successful primarily online public advocacy in Los Angeles to protest around immigration issues (Jenkins, 2006).

Jenkins and his team are not the first to recognize that new media skills or literacies could be relevant to civics through documentary and oral history.

The Persistent Issues in History Network (PIH) has developed a curricular model through which exemplary lessons, databases with over 1,400 artifacts on the civil rights era, and graphic organizing tools are made available to teachers so they can scaffold students in developing such skills toward having a “nuanced understanding of history required for civic competence” (Saye and Brush, 2005, pp. 168-171).

They are not alone in their efforts to activate the world of web 2.0 and social media around civic participation. Classic social studies lessons engaging students to critically analyze primary sources on the primary and secondary school level have been affected by increased levels of access and available tools. Web based software, like Primary Access, provides students with the opportunity to “acquire data, remix and reinterpret data, and report the results in a media-rich format” (Bull, Hammond, & Ferster, 2008, p. 280) on the web and to share the online primary source documentaries with peers and other instructors. Providing students a hands-on opportunity to work with these multimedia non-fiction storytelling techniques support the development of both Common Core State Standards and Jenkins’ new media literacies.

Assessing students’ participation in civic engagement. So much of the research included in this chapter showcases the ways in which technology has served as a tool to support pedagogy and content-knowledge. As technology supported the use of problem-based learning and civics in social studies, its implementation was mutually supported by the pedagogy and disciplinary approaches. The TPACK framework points us toward the intersection of these elements, where the need for cognitive scaffolding consistently appears. To understand the skill-sets of civic engagement to scaffold, it is vital to understand the types of engagement that can be assessed.

The assessment of projects that seek to expand students' civic participation is no easy task. In his description of the challenges of their higher education work described earlier, Thomas Ehrlich (2000) indicates, "At each of the campuses we have visited, as in higher education as a whole, assessment of student outcomes is the least developed component of the overall effort to foster student moral and civic development" (p. xxvii).

In one research effort that sought to provide meaning and definition with the conceptions of youth civic engagement, the researchers organized two-days focus groups stratified by age, where typically 10 individuals from politics, community service learning and organizing, academics, religious leaders, and union organizers could come together and brainstorm about the characteristics of politics and civic life. The 11 group sessions held in a mix of four states that span the country (Northeast, West, South, and Midwest), and found themselves able to qualitatively explore terminology and imagery around community involvement (Andolina, Jenkins, Keeter, & Zukin, 2002).

The biggest findings that the authors extracted from the collective dialogues were that words carried great weight and heavily influenced how participants might define their civic participation. Generally, the participants saw much more of their own activities in the world as forms of volunteerism, eschewed most formal politics and good citizen civics obligations as oppressive and carrying a negative resonance, were connected to the diversity of the world around them, and offered their own original critical agenda of community and world issues shaped by connecting with new media outreach techniques. (Andolina et al., 2002). This information is valuable when considering secondary social studies projects that seek to connect students with the larger political landscape. It suggests that students can gain a robust understanding of inspiring civic change by having an active role in the language and shaping of new media campaigns. Put

simply, engaging students to produce new media campaigns supports their best understanding their own involvement and role in the civic process.

One research project gathered surveys during the 2004 election campaign, from 1,924 secondary students, largely 11th and 12th graders, distributed among 88 social studies classes in the Northeast. Pre-survey and post-survey events were scheduled to bookend the election itself and engaged students in the self-assessment of possible involvement in community-based and political activities, along with their predicted responses to imaginary scenarios. Using “rotated principal components analysis” (Flanagan, Syvertsen, & Stout, 2007, p. 2) and “structural equation modeling” (p. 2) the researchers felt they were best equipped to “tap a larger meta-concept ideal” (p. 2) and come to understand the psychometric properties of their questions. The researchers share the questions from their instruments with their Cronbach’s alpha score, providing concrete strongly reliable measures. The research affirms the value of engaging students in scenarios and document-based tasks surrounding research to provide baseline information.

A Kellogg Foundation funded effort that gathered community builders from within the Building Movement, the Ms. Foundation, and the Alliance for Children and Families in 2008, and engaged with Connect Grant recipients in a March 2009 Civic Engagement Evaluation Summit in Santa Ana Pueblo, New Mexico. The 26 conference participants were able to examine case studies and apply and reify what the collaboration had been learning about assessing evidence of civic participation and change. The resulting observations, summarized as the challenges of assessing civic participation defined: civic participation as a non-linear item that can be viewed through the tensions between individual, community, and programmatic impacts; identified the requisite use of single and multiple case studies that examine the mechanisms of change; urges funding changes which drop the model of requiring control groups or viewing organizational development as a

factor of the participation assessment; owned the need for a definition of the desired change; accepted the paucity of assessment tools; and reflected the year or multi-year time frame of participatory change that often exceeds the period of evaluation (Building Movement Project, 2010).

Put simply, the research suggests that assessing student participation in civic engagement need involve them in activities that capture cultural values and construct first-hand testimony that elaborates their voice and vision.

The decision of the researchers to draw on first-hand testimony and participant led case studies allowed a diverse group of community activists to retain voice and engage the entire conference in collaborative research. Participants were thereby able to perform a check of the researchers' conclusions. The process showcased the incredible value of *voice* in research and assessment of civic engagement, suggesting the need for increased usage of techniques that retain voice and a diversity of case study information.

Researching Technological Pedagogical Content Knowledge

This chapter has detailed a number of ways in which technology innovation has mutually support and been informed by the pedagogical strategy of hands-on problem-based inquiry. In detailing the way that Web 2.0, social media, and mobile devices have supported student-led messy exploration, a more finely tuned picture of innovative pedagogy has emerged.

Through the examples of technology infused into social studies in this chapter one can see myriad ways in which non-fiction multimedia construction and tasks that involve dialogue with the world beyond the school's doors can enhance disciplinary learning.

The use of the TPACK framework allows us to connect these two dimensions further by looking at where they mutually constitute each other—where technology, pedagogy, and content-knowledge have a mutual effect in reshaping each other.

TPACK: A subject for study. It is entirely possible, for example, for a teacher's focus to be on a specific pedagogical approach to student engagement in which the technology involved does not include multimedia resources and simply relies on paper and pencil. Likewise, it is possible to develop lessons that focus a learner on the concrete skills of manipulating text within Microsoft Word without any subject-content knowledge or overarching pedagogical goals beyond printing their name in four sizes. In many ways, the early years of technology integration and exploration in the classroom sometimes saw lessons that when viewed through modern eyes epitomize the disjoint of these sets. In the later years of the twenty-first century's first decade, educators were becoming more explicit in looking for the union of these elements—trying to link technology in the classroom to a more conscious exploration of the subject.

In a brief overview, the authors unpacked the TPACK approach identifying different pedagogic functions digital video activities could embrace within specific discipline-content fields. The authors cite TPACK as a “mechanism for exploring” (SIGTE/NTLS, 2008, p. 24) the best ways to “employ emerging capabilities” (p. 24) unique to those areas, for example: allowing students to play and modify new physics concepts they are exploring, to conduct first hand historical inquiry; to represent visual imagery in literature; and to render trigonometric mathematical concepts (SIGTE/NTLS, 2008). This kind of clarity truly makes technology a more effective tool—as it recognizes that a tool ideally need be linked to the functions that it may best perform in a specific context.

The conceptualization of TPACK is helpful not only to distinguishing the ways in which technology can be used, but also to assist instructional leaders in viewing their curricular design process. TPACK supports instructor's intentionality, because it provides a language for those who work with technology-infused curriculum to define the context of their content.

As researchers began to expand investigations of the elements defined in TPACK- technological knowledge, pedagogical knowledge, and content knowledge- some sought to better understand the implications of breaking these down the concepts into factors and scales (Archambault & Barnett, 2010; Kabakci-Yurdakul et al.,2012) creating a better elaboration of measurement and function.

Some researchers focused on the areas of intersection and union, looking each element individually, at technology-pedagogy, technology-content, and pedagogy-content, along with the total package of TPACK. The researchers used think-aloud piloting and two rounds of review to establish their 25 item Likert scale tailored design survey, gathered from 596 K-12 online teachers from twenty-five states, one-third of those they surveyed (Archambault & Barnett, 2010). In reaching out to professionals in the field, the majority educational and-or subject content master teachers, the researchers asked those with the greatest practical experience thinking about TPACK to further define it.

Using SPSS to run a series of statistical methods including factor analysis for construct validity, Cronbach's alpha, Pearson r correlations on subscales, and a Corrected Item-Total Correlation the researchers overall scale held an internal consistency of 0.94; its findings on the subscales however "indicate that the highly accepted seven mutually exclusive domains of the TPACK theory may not exist in practice" (Archambault & Barnett, 2010, p. 1658) charging only pedagogical content knowledge, technological-curricular content knowledge, and technological

knowledge as unique practice concepts (2010). These domains standing as distinct support the earlier conceptualization of content-specific applications of technology being most powerful.

During the later phase of the think-aloud process, researchers got a first-hand education from their test subjects regarding the challenge of clearly labeling difference-- to which domain an individual survey question belonged. Limited by the self-reporting of respondents and the lack of subject-specific questions, the researchers still managed to define very real challenges for professionals to separate distinct elements in TPACK. Their findings stressed “the importance of content knowledge when incorporating the use of technology” (Archambault & Barnett, 2010, pp. 1659-1661).

Another attempt to quantitatively drill down into the constituent elements of TPACK occurred at a two-phase research effort in Turkey, through which conference gatherings of instructional technology educators developed and refined a collection of items that sought to establish TPACK indicators. The 36-item scale that resulted from the collective intellectual work of the 10 reviewers, twenty-four workshop participants, and nine original educational technologists was used with 995 pre-service teachers at Turkish higher educational institutions during the 2009-2010 school year. In dividing the respondents into two groups and assigning normal distribution and a factor analysis through a series of successful statistical tests, the researchers identified that nearly 60% of variance in the scale was explained by the factors of “design, exertion, ethics, and proficiency” (Kabakci-Yufdakul et al., 2012, pp. 966-968).

Beyond simply detailing these four factors, the researchers looked at how much variance each factor explained—finding that nearly one-fifth of the variance was explained by the design factor and another one-fifth explained by exertion. In their line item definitions, the researchers elaborate these instructional skills to focus on the proper assessment of the baseline situation; a

thoughtful analytic selection of methods, techniques, and technologies; the preparation of activities; the gathering of materials and measurement tools to assist in the teaching process; the active learning, and the measurement and evaluation of the effectiveness of the teaching process (Kabakci-Yurdakul et al., 2012). In these traits, we can see similarities with the other research and its suggestion that the focus on technology's role within the pedagogy and value-added impact on content is key. The next highest explanation of variance focuses on the technology and problem solving, which is also consistent with the three dimensions defined by Archambault and Barnett.

Some efforts to elaborate on the TPACK model have avoided quantitative measures, and instead focused their effort on creating a snapshot of how this works in practice. In a *Computers in the Schools* article from 2008, researchers expand on previous work they did with in the secondary history classroom with the web-based *Primary Access* tool. They highlight how contemporary three-minute documentary assignments on Civil War tensions and secession represent a traditional implementation of engaging students to draw on primary sources to adopt an historical perspective and generate a product that captures the detail and perspectives surrounding the event (Bull et al., 2008, p. 276). The research on TPACK begins to come alive in observations like this—we see the connection of the content knowledge on the Civil War to the pedagogical content of engaging students in the practices of historians, along with the technological infusion of a free online program that assists them in gathering the primary source images and documents into a final documentary product.

The researchers additionally share anecdotal information on a Kansas State University professor's digital ethnography assignments to students, linking the resulting product in both the high school and college classes mentioned to a larger cultural phenomenon. The researchers

refer to the Pew Internet and American Life Project findings on Internet usage and Tim O'Reilly's "Web 2.0" (Bull et al., 2008, pp. 280-282) concepts to suggest that TPACK's framework of content-specific technology infusion can best be achieved through the harnessing of online participatory culture- engaging students to become remixers and producers of academic content that can be in turn shared for others' usage (Bull et al., 2008). The connected environment the researchers describe allows the students never before seen levels of access to external data, and the ability to prepare shareable material that embodies their subject-specific learning.

Beyond the benefits of the medium, the authors also extol the affordances that web 2.0 provides for the development and sharing of technologies matched to pedagogical needs. They point out the pedagogical benefits that direct links to annotated primary source documents and an integrated script editor provide for a teacher wishing to guide student-centered learning.

In addition, they suggest that the "niche audiences" (Bull et al., 2008, p. 282) of the web and its "long tail" (p. 282) supported the development of free online software targeted to social studies classrooms, providing students capacity to easily gather narration, images, documents, and photographs in a server-side environment (Bull et al., 2008). The evolution of these tools fulfills some key elements of TPACK, enabling teachers to identify and engage students with manageable technology that fits the subject content, embeds sound pedagogical underpinnings, and lends toward meaningful assessment.

The value of looking at scaffolds within TPACK. One of the concepts which truly emerges from examining this intersecting area of all elements, is the need for a new kind of teaching—one which places the teacher as a construction manager providing academic scaffolding to help guide the design of student learning.

Students working with the Thinking Tags were especially inspired to engage in inquiry even before they had internalized the biology language and concepts; researchers credit this to “matching technologies to curriculum goals to help scaffold students’ inquiry activities” (Hug et al., 2005, p. 467).

The authors by no means suggest that this match created an ideal environment for supporting students at the highest levels of inquiry. In fact, they are explicit in detailing the ways in which the Thinking Tags sometimes distracted students from taking explicit procedural notes, or the ways in which sophistication was lacking in their investigation process. They describe an understanding emerging from the research, that led to later iterations in which increased scaffolding from teachers assisted the students in utilizing them to more sophisticated levels (Hug et al., 2005).

The affordances for inquiry and the need for scaffolds were also front and center in the analysis provided by researchers at Purdue and Arizona State, who examined the online worlds of Whyville, WISE, River City, Knowledge Forum, and Biokids. Although the authors specify the differences of task and organization within these five environments, they identify central common threads that kept meaningful inquiry-based science at the center of the project, including students’ participation in locating and using data and information, modeling solutions that solve problems, and collaborating as a group of learners (Simons & Clark, 2005).

The researchers credit the five online environments with providing students both the structural supports lent from the modeling and collaboration and the intentional scaffolding supported by on-screen messaging, reflection notes, pull-down prompts, rules descriptions, user-to-user messaging, data resource sharing, or resource angels (Simons & Clark, 2005). Ironically, we can see the values of TPACK very much alive here too. The concepts of collaboration and

modeling speak to pedagogical approaches that engage meaningful opportunities with the technology and the content. The more formal scaffolds embedded in these online environments a kind of teacher assistance—albeit a virtual one. With the opportunity to be guided on procedural elements and share evidence, users get layered support in exploring the tasks before them.

Student participant in some research projects have defined and critique the value of the supports built into online environments or software. The research described earlier around *Decision Point* software usage (Saye & Brush, 2002) included a major increase in the structural mandate of storyboarding—tripling or more students’ obligation to work with the software to develop a formalized structural plan to their final multimedia project. Student subjects in the research credited the value of the presentation preparation, although subject “student 4” (p. 90) critiqued the limitations of the hard scaffolding embedded in the design of storyboards, requesting more emergent “soft scaffolds” (p. 90) such as “timely” (p. 90) teacher review that could be offered throughout the process.

The developers added or considered adding hard scaffolds over time to structure students’ exposure to the construction of historical arguments, the development of alternative explanations, and the application of historical evidence into social problem solving; they discovered “clearly there are limits to gains that may be achieved through hard scaffolds” (Saye & Brush, 2002, p. 93) as they assisted with structuring the activities but did not engage the highest-level engagement with students that is supported from emergent context-specific teacher support. This understanding has tremendous implications on the design of technology-infused classroom curriculum. The need for concrete structural design scaffolds that set up the project requirements with clear guidance for students, and the ongoing mentorship needed from

instructors provides guidance in how everything from handouts, to project design, to assessment be conducted.

Mixed-methods research was conducted during the first four months of 2010 at a public university in Texas, to look at the perceived and actual usefulness of scaffolds embedded in an online instructional technology course. As sixteen students in the graduate course participated in Blackboard and studied various web 2.0 applications, the instructor/researcher documented the students' progress through a virtual observation of their learning artifacts, and incorporated three surveys at different stages of the course (An, 2010).

The researcher drew on existing paradigms breaking scaffolding into the conceptual structured through mandatory student completion of Project Plans and Progress Reports in Wikispaces, the technological procedural resource scaffolding built into their online resource notation requirements, and the strategic scaffolding offered through professorial feedback (An, 2010).

Although students in the project complimented the affordances that the technology provided for “collaborative writing and editing” (An, 2010, pp. 730-731) they challenged the premise that wikis were effective for decision-making and problem solving, instead turning to synchronous communication software or face-to-face meetings if in geographic proximity.

The study also stresses the value that the students and instructor mutually felt through the process described above-- as *hard* scaffolds engaged them in planning and communicating and *soft* scaffolding redirected their learning activities.

An experimental design was used on a group of 72 pre-university students during six lessons over two weeks of a history course in the Netherlands, with a goal of examining two distinct types of argument design (diagram vs. list) scaffolds present in the Virtual Collaborative

Research Institute groupware to which they were randomly assigned in dyads. Students used the technology to communicate, research, and develop argument charting for their major performance-based assessment task- an essay that required they incorporate historical reasoning and evidence based arguments in answering “whether the changes in the behaviour of Dutch youth in the sixties were revolutionary or not” (Van Drie, Van Boxtel, Erkens, & Kanselaar, 2005, p. 28).

Through pre- and post- testing, a coded review of the groupware student chat, and the artifacts of their work, the researchers looked amongst chat utterances to identify historical reasoning and focus carefully on identifying when students “co-constructed their meaning on this subject” (Van Drie et al., 2005, p. 32). Statistical analysis of the pre- and post- test on content-knowledge and t testing of the documentation of co-elaborated historical reasoning did not show significant differences between the conditions. The researchers suggest the explanation for these findings can be seen in the documentation of how much collaborative communication focused on figuring out the technology tools, in the way that the diagram condition did result in student performance quality increases, and through the implication in chat that students do not challenge each other’s ideas effectively enough to maximize co-elaboration (Van Drie et al., 2005).

Although from another nation, the research affirms certain concepts similar to the other studies. The design of the online environment was built with conditions that sought to engage hard scaffolds and in turn differences. Much as Saye and Brush’s earlier work reflects, there are limits to the ways in which these hard design elements can work in isolation. The combination of emergent influences is clearly suggested in these findings, as that it strongly represents the idea that one can never plan for all eventualities. And it is precisely the power of communities to mutually shape the individual that exists and the heart of history/social studies learning. The

challenge for students to define whether the behavior of their parents' or grandparents' generation was *revolutionary* in the 1960s, engages them in assessing lived through history in a way that draws on the evidence of first-hand narratives, primary sources, and historical records.

Design for Research: Picking Scaffolds from the TPACK

Design-based research to support TPACK. TPACK offered a framework that examines the intrinsically linked elements of technology, pedagogy, and content-knowledge. Design-based research provided a nice parallel, as it brought together other intrinsically linked elements— design, theory, problem, and naturalistic context. The approach in general applies “rigorous methods” (Barab, 2014, p. 158) to develop theory as part of design-based solutions. Resultantly, theories can be extracted from “principled accounts” (p. 158) and are successively examined and refined throughout the process (p. 158). In this way it was particularly suited to TPACK and curricular innovations and allowed for an iterative process for design and refinement.

Researchers in 2004 conducted a web-based survey that gathered complete responses from 170 students from eight schools in the IDT Futures Group, seeking to have them explore their understanding of the instructional design and technology field in which they were graduate students. The open and closed ended questions engaged masters, doctoral, and specialist students to explore the complexities and contradictions that represented their take on the field. The researchers acknowledged that they “would be remiss” (Smith, Hessing, & Bichelmeyer, 2006, p. 26) not to integrate the voices of committed future leaders in their discipline and use these views to identify areas of concern and devise interventions to address them.

When taking on an exploration of problem-based learning and technology in the classroom, researchers have been presented with the challenge of finding a research method that is appropriate

to capture the complex activities going on in the classroom while supporting the researcher in drawing some meaning. In addition, a commitment to student-centered progressive education privileges successful learning by the way it which student participants are able to embrace it and develop transferable knowledge.

In the 2003 *Educational Researcher*, a team of professors from Vanderbilt, Berkeley, and the University of Texas offered their experience with the use of design experiments as a valuable scientific method of researching educational practice. Their argument was that design research involves “theory-oriented enterprises whose ‘theories’ do real work in practical educational settings” (Cobb, Confrey, DiSessa, Lehrer, & Schauble, 2003, p. 13). In this way, design-based research offered an approach to research that is very consistent with problem-based learning.

Problem-based learning, as described earlier, embeds the inquiry and learning by doing advocated by Dewey while pushing students to maximize their self-directed learning. Design science’s focus on purpose, intent, and interaction with the world (Mor & Winters, 2007) establishes common ground with Dewey’s values around experiential learning. Learning by design processes paralleled the observed participants’ learning by doing.

Instructors working in higher education and vocational education had found success with implementing design-based research to enhance existing curricular designs and academic programs. Instructors of the Australian Army’s *Computer Based Learning Practitioners* course had been inspired to retool part of their course when post-evaluations revealed a shakiness and discomfort among graduates around connecting with career opportunities. The instructors looked at the *Evaluating Educational Multimedia* component that came at the end of the course, and agreed to a design-based research process to “review, revise, and re-design” (Ashford-Rowe, 2008,

p. 23) content and “the summative assessment activity” (p. 23) to make both more predictive of preparation for post-graduate career activities (2008).

The researchers credited their interpretation of the design-based process to Thomas Reeves, and documented their usage of a four-step process that: engaged exploratory discussion among thirteen educators, tutors, and designers associated with the course to develop notes on program problems and possibilities for change; drew on similar research literature to define eight draft principles which they refined among themselves and vetted with three authentic assessment experts; delivered the course content in four 90-minute sessions which were observed, filmed, and documented through researcher notes and participant surveys; and looked at students’ experience with the new authentic assessment tasks to evaluate how they aligned to the draft design principles and how they had succeeded in getting the desired results from students (Ashford-Rowe, 2008).

The documenting doctoral researcher expressed his belief that the design-based research approach had been an effective choice for the project as it limited the instructors’ range of possible interventions by highlighting particularly appropriate ones and integrating them into an active course (Ashford-Rowe, 2008). It is a similar quality that others have extolled describing the way “the design process iteratively generates solutions and then tests them against an array of functional requirements” (Mor & Winters, 2007, p. 62) that maintain a rich picture of the problem analysis. In these ways, the design-research process maintains a strong practical value in supporting a process of enhancing instructional activities.

As pragmatic as the model may be for enhancing instructional experiences, design research was credited as using its multilayered approach to develop theoretical meaning into the process. “Design experiments are conducted to develop theories, not only to empirically tune ‘what works’; they establish specific domain content, suggest students’ patterns of internalizing the content, and

analyze the content of student learning by reviewing artifacts generated through participants practice experience” (Cobb et al., 2003, p. 9). It is these qualities that made design-based research an effective method for exploring the theoretical strengths of instructional approaches like problem-based learning and technology integration.

Some have critiqued those design-researchers who tried to use design-based research with an eye toward proving cause-effect or superiority of method through the addition of quasi-experimental designs and pre/post-test quantitative measures. Those who have espoused a deep belief in design-based research have often clarified that the method is often used best when it has embraced a context-rich approach that is much more targeted in its focus on specific interventions that need customizing and improving.

The context rich approach focused on exploring existing “design patterns” (Mor & Winters, 2007, p. 71) offers configurations for tackling problems as a construct to examine, validate, and refine approaches to layer a method for “ontological innovations.” (p. 71). These efforts to develop knowledge and concepts within a domain have helped to maintain context and detail. The design research process offered researchers the capability of checking the validity of their design tool by examining whether it creates expected results when applied in practice as a problem-solution (Andriessen, 2008).

By limiting its setting and scope, the design-based research has been “typically test-beds for innovation” (Cobb et al., 2003, p. 10) that allowed researchers a greater level of drilling down to “encounter relevant factors that contribute to the emergence of that form and to become aware of their interrelations” (p. 10).

This limited scope the design-based research model seemed particularly apt given the earlier described espousal of the Dewey, Montessori, andSizer approaches to education. The

learning by doing inquiry based, and “less is more” (Coalition of Essential Schools, 2010, para. 2) approaches synchronized well with the design-based research tact of actively engaging with practice innovations in order to have gained depth-based knowledge about how fit the innovation is for achieving its goals.

Beyond affording researchers specificity of focus, some researchers have lauded the way in which design studies allow for flexibility in their selecting on what they wish to focus. This model allowed researchers to select between using the process to refine educational designs “while keeping the tools fixed” (Mor & Winters, 2007, p. 63) to explore the tools themselves staying flexible with activities, or searching to round out the design and coherence of an activity system. Like a powerful camera lens, design-research enabled the researchers to engage as practitioners whose vision can be closely targeted to the tasks at hand.

Such flexibility has been helpful in embracing the exploratory nature of investigating newer online, hardware, and software technologies in the classroom. When faced with limited direct precedents, design-based research afforded an individual researcher an approach that could be employed with their practice innovations over multiple investigations to develop a nuanced understanding of everything from the technique, to the conceptual underpinnings, to the tool, or to the system. In the case of this research that seeks to examine newly minted ideas in the Common Core State Standards and in the 2009 Jenkins MacArthur white paper, the model offered an appropriate way of picking up on the conceptual elements and further refining their application.

Design research can be viewed as a workplace approach that tackles a design problem through the development of general solution concepts that can later be developed as reality-tested specific solutions to specific situations—developing “relevant and rigorous” (Andriessen, 2008, p. 132) knowledge.

Andriessen saw a natural combination of the approach with action research and defines a process of theorizing, agenda setting, designing, diagnosing, action planning, action taking, evaluating, and specifying of learning (Andriessen, 2008, p. 129-130). Despite focusing on the workplace environment, the lessons were incredibly relevant to investigations in a classroom. It is due to the research approach's traits that "innovative educational environments may be simultaneously designed, taught, and studied" (Saye & Brush, 2002, p. 83). This firmly grounded the research in a level of classroom practice that more firmly assured something has been learned about the nature of one's work efforts.

The approaches described above used individual cases and reflects on their value while developing a collective consciousness. The result is a fostering of increased overall understanding. Individual events interpreted in this manner create a dialogue or inter-textual communication in which common logic develops and *best practices* emerge from repeated investigations. This affords micro, mezzo, and macro levels of investigation in the classroom; the result was that classroom teachers and school administrators gain usable, practical information about pedagogic interventions.

Overview of This Research Project

The design implementation of the VOR unit. Much of the research literature reviewed in this chapter highlighted the value of real-world civic participation, hands-on collaborative learning experiences, and social media digital production. Most of the previous studies detailed in these pages limit their scope to an individual element of technology, pedagogy, or content knowledge.

This Voices of Representation Curriculum (VORC) research study applied TPACK because it offers a triple-aspect view of the classroom. The TPACK model captured the interplay

of the digital and social media as technologies, applied into the high school social studies classroom to ground problem-based learning pedagogical activities, with civic participation highlighted as the content knowledge. The research in this study applied design-based research techniques to further explore the new media literacies.

The research adopted this theoretical approach to acknowledge and honor the innovations of curricular change that can occur when digital technologies and inquiry-driven pedagogy are used to support increased student participation in the living embodiment or civic participation elements of their subject matter. Put simply, this research was premised on John Dewey and Theodore Sizer's beliefs that students learn by doing in experiential opportunities connected to the worlds beyond the school's doors.

This was particularly poignant in the research as it contained the parallel process--high school social studies students who have studied civic participation and activism having become actual civic participants in historical information gathering by having interviewed community activists. This research study took a design-based research approach to refine the hard and soft cognitive scaffolds that supported these high school students as they developed a digital media kit to capture their hands-on experiences with civic participation. The *Voices of Representation Curriculum* (VORC) Project was proto-typed and its scaffolds developed and informed by the researcher's four years of action research between the completion of doctoral classes and the approval of the research phase of the dissertation. The scaffold tools were shaped in part through the researcher's collaborative involvement in leading expeditionary learning activities across local city council districts and across Washington D.C. for students' exploration of national lobbying and legislative processes.

During the winter 2014 academic semester, high school social studies teachers at the research site employed the VORC cognitive scaffolds with their respective sections of students. These hard and soft scaffolds are designed as support materials to enhance students' capacity to complete two successive iterations of digital media kits that captured the students' learning process and content knowledge.

The Voices of Representation Curriculum project capitalized on the experiential or expeditionary learning values by providing technology-infusion that supported participant students in making use of the residents of their city as a space for hands-on learning grounded in real-world problems. The VORC project provided the opportunity for students to engage in acts of civic participation both through their research and their digital/online presence. In doing so, it engaged participant students to increase their civic participation in the worlds beyond their classroom—around the whole school, among family and friends, around their community, and among communities of practice.

This research placed its focus on the cognitive scaffolds which the researcher had designed to support teachers and students in the application of the digital technologies to their classroom course/project requirements.

Supported by the findings of the research detailed earlier in this chapter, the researcher had developed both *hard* and *soft* scaffolds to clarify participatory expectations and applications for student, teacher, and school community members alike. The research offered a rubric and teaching materials on which the school community could build their understanding of the project. The first iteration of student work turned in guided by these scaffolds, was analyzed with this rubric on an aggregate level. Noticed areas of general weakness in student performance informed and resulted in a second iteration of scaffold materials aimed at offering students more finely support.

The two hard scaffold items were a Student Work Assessment Rubric document and a project assignment document. The researcher believed that these two documents provided the participating teachers and students with a compelling vision of what civic engagement the project requires, which technologies and online resources were requisite, and how they should have approached the learning tasks. Consistent with the problem-based learning standards discussed in this chapter, these two hard scaffolds surfaced students' existing schema regarding these topics and allowed them to explore tensions in their understandings by having a concrete touchstone. Additionally, the clarification of project goals and learning supports helped students operate in the *zone of proximal development* which Lev Vygotsky argued is the space in which the maximum amount of new learning can occur. The scaffolds did so because they assisted in providing a schema which made the large complex task that was previously unimaginable, imaginable. The softer scaffolds added even richer supports for the student participants to make imaginable the very specific requirements of a previously unimaginable task. Collectively, the scaffolds helped to define skills/behaviors/practices/timeline to help students can aspire with guidance.

The four soft scaffolds were digital presentations available for the students via online access. Students participating in the research were initially introduced to online spaces in which these documents, videos, or files were hosted, which allowed access beyond class time. Each of the four scaffolds addressed a general area of project functionality, using multiple pages to provide students a range of documentation that they might find useful. This ensured that they were able to access the material on their own schedule from either school or home.

Included among the scaffolds were ones that addressed: downloading video files from your mobile device; uploading digital files to Google Drive; creating a page on Wikispaces; adding hyperlinks on Wikispace pages; using commenting functions to post and respond to questions on

a Wikispaces page; organizing questions for oral history interviews; compiling research into background context; and analyzing sources. The four scaffolds, and all the topics included within them, were aligned to the new media literacies or standards by which the participants' work will be evaluated.

This research relied on providing scaffolds to support participants in exploring the use of digital formats and tools, and in doing so, exposed the students and teachers to the actual technologies that will be used as they develop their own high quality new media-kit content. In this way, it sought to overcome the tendency described earlier in this chapter through which general-purpose technologies failed to connect with subject-specific content because students have no exposure to the usage of these technologies in practice. Participant students gained a first-hand exposure to seeing how tools like Wikispaces can be used in the pursuit of social studies efforts to document civic participation in government—instead of them first encountering it as a space to paste encyclopedic content.

The VOR project research: The setting. The research site was a small public progressive public school beginning its third decade, whose essential instructional pillars included project-based/problem-based learning, digital technology integration, and the value of social and emotional learning. Founded during the Annenberg Foundation's 1990s era of support for the creation of small schools, the school served as a model for at least five newer schools throughout the general geographic region, developed during the 2000s Gates Foundation period of funding new schools.

The school had long pursued social and emotional learning through a commitment to social justice lens that has inspired its long-standing commitment to treat every student, family, and faculty member as unique individuals. With an equally strong inclusion of social work principles

in its design, the school boasted an extensive approach to pupil personnel supports through which faculty advisors, school administration, and partners in a local community-based social service agency offer the school's families hands-on support services.

The school began its existence with a diverse student body, representing relatively equal percentages of African-American, Latino, Asian, and Caucasian students. During the course of its twenty-one-year existence, it has lost much of its Asian population, with a commensurate increase in its Caucasian population. Although the school began as a school in which the faculty selected half of the student applicants and the city selected the rest randomly, the school had since developed into a screened program which interviews applicants for admission to its sixth grade with the expectation they will attend all seven years. Applicants to the school were interviewed by a collective team of parents and faculty who searched for an academically heterogeneous population of students interested in the school's central pillars.

The researcher was part of the founding team that develop the research-site school during its early years, and had served as a teacher and then an administrator before leaving the school to found and develop a new public school site that further explored the principles of problem-based learning, technology, and social and emotional learning in a different locality within the large district.

The prototyped scaffolds used in this research were informed by the researcher's informal action research performed in years past when previously working at the research site. That work, not detailed in this dissertation, shaped the professional sensibilities of the research and suggested beneficial practices to support teacher pedagogy and student learning goals. That action research had taken place in a 10th grade humanities combined social studies/English classroom with teachers who were not involved participants in this research.

The research site was selected as it served as an effective test-bench for the activity due to two factors— alignment of instruction and establishment of community. The research site was a school whose chief premises aligned with elements that the researcher valued as key to classroom experiences. The researcher felt this also reduced the possibility that egregious practice differences would crop up among the teacher participants during the research. The similarity of values was helpful and not an interference as the students themselves were not a unit of analysis. The site benefitted the product testing nature of the design research, as participants embodied the type of users that might first adopt the product.

The school had already developed a community culture and an environment of learning and rigor. The school's entire curricular approach has been documented at annual school reviews as cohesive and well developed. The school had a successful record of employing school-designed or externally designed curricular innovations. The serious nature of academics at this school helped to ensure that interaction with the VORC project were not likely to be jeopardized by faculty or student fears of academic innovation or activities within the school culture.

The research site school espoused customized *Habits of Mind* to encourage academic risk taking, critical thinking, and forming intellectual connections. The school replaced the typical 9th and 10th grade social studies global history survey-course with courses that look at how governments have established themselves in different times and places, and the ways in which ongoing struggles to define and establish human rights have led to change. The research site had faculty who had developed or revised original courses to highlight a series of thematic explorations of core social studies disciplinary elements, rather than to cover specific content—evident of the practices advocated by the Coalition of Essential schools- of which it is a member.

The research site's 9th grade Humanities course, merging social studies and English in a double period daily, focused on governments and social justice while its 10th grade Humanities course explored global conflicts through the lens of the United Nation's 1948 *Universal Declaration of Human Rights*, examining specific periods and places.

The research site's second semester of the 10th grade Humanities course, explores socio-economic wealth and power and human rights in America. The social studies content involved an in-depth exploration of the city council districts and engaged students in ethnographic studies of the neighborhoods. Students were required to participate in a process that paralleled the city council discretionary funding application process to generate understanding of how neighborhood improvement projects are funded. As the unit moved on, students collaborated in self-created teams around a self-chosen topic of inquiry on national issues affecting human rights. In the past at this school, these topics had tended to focus on issues like gun control, mental health legislation, euthanasia, etc.

As part of these teams, students engaged in first-hand research with national lobbying organizations in their city and in Washington D.C. The course culminated with the entire grade visiting Washington, D.C. and then spending several weeks developing their own media plan/media kit to successfully draw an audience's attention to propose legislative/policy changes or needs.

The research site's 11th grade social studies curriculum engaged students in an exploration of American History from the revolutionary war period until the progressive era. Also at this point in the academic sequence, the students were required to develop a 10-15 page annotated thesis paper which they were required to defend before a committee of teachers, peers, and parents. The research site's 12th grade course for most of the last decade had engaged students in exploring *lived*

through history by investigating the civil rights era heavily through documentary footage, primary source materials, and interviews. Intermittently, the course required students to speak to an activist who had worked around issues relevant to the civil rights of women, the LGBT community, and people of color.

The Voice of Representation Curriculum involved in this research project offered the teachers and students in the 12th grade a curricular project that paired with their existing content. The focus on civic engagement in the VORC resonated with the goals helping students understand history through this lived through perspective.

The scaffolds in the Voices of Representation project scaffolds were believed by the researcher to be the key element to support students' success with meeting project requirements by delineating how students could generate authentic civic participation through digital tools and then use these tools to capture the interactions. The research employed the design-based research strategy to refine a set of hard scaffold elements (rubrics and project sheets) and soft scaffold elements (best practice and *how to* documents). The research site teachers were asked to follow the VORC assignment approach—asking students to complete two successive digital content portfolios of their thoughts, research, feelings, and communication around their chosen topic of inquiry.

The research proposed that the student work product resulting from the first assignment and prototyped scaffolds be analyzed immediately after submission to support a refinement of the scaffolds. The student work was analyzed in the aggregate for strengths and weakness trends, rather than examining individual changes in students. The refined scaffolds were revised immediately to support students through the second assignment. At the completion of the second assignment, the researcher examined the final aggregate product of work and interviewed teacher

participants to add their perception of the scaffolds' value in supporting the development of the student work.

The VOR design method and timeline. This research proposed a timeline that began with the implementation of a *beta* version of the cognitive scaffolds to the 12th grade history class during the late part of the fall 2014 semester. The VORC project unit was integrated into the 12th grade course after students had participated in a study of the 1960s and 1970s civil rights issues and their parallels in contemporary America. Students' study of these change initiatives was set to be complemented by VORC asking them to engage in two phases of interviewing people about contemporary history. Students were asked to engage in transmedia communication—capturing these civic engagement interactions in digital and social media.

The VORC project unit incorporated the iterative media capture process as a technique that offers activities to develop the students' reflective understanding of what goes into creating political and social change. The proposed scope was to access between 40 and 60 students in the school site's twelfth grade. After the initial debut of the scaffolds in late December 2014, a brief period was proposed during which a first iteration of the beta Voices of Representation scaffolds was introduced, tweaked into a *1.5 generation*, and refined into a second iteration of scaffolds. The details of this process are in Chapter 4.

Although online surveys at several phases and a post-participation optional student interview were part of an originally approved plan to collect information on students' perceptions and beliefs regarding their skill with digital tools, both were meant to be confirmatory rather than informing scaffold revision. Neither was ultimately conducted.

An aggregate analysis of the student work product was proposed to be in the middle of the process during a one to two-week period, with teacher participants using the Voices of

Representation Student Work Assessment Rubric (VOR-SWAR). This aggregate analysis of the initial portfolio of student work, an *interim assessment*, was meant to identify areas where the student learning products fell short of meeting the Common Core State Standards and Jenkins defined new-media literacies that were described in chapters 1 and 2. This information provided the researcher with the information needed to revise scaffolds for students use during the end of January.

This information from the teachers' analysis of student work was proposed to help the research critically examine the beta hard and soft scaffolds and appropriately revise and enhance them to offer better curricular guidance towards students' digital documentation of their authentic civic participation.

Conclusion

The TPACK perspective engages educators to consider the intersection of technology, pedagogy, and content knowledge. Design-based activities in this research project were proposed to capture a robust picture of the implementation process when high school history teachers apply technological tools to solve real-world civic interactions.

The design-based research was proposed to support the development of working theory as to the alignment needs and shifts around the three TPACK elements described above. The use of a wiki, presentation, podcast, or video content, as described in the research studies documented in this chapter, often struggle due to mismatched use of general-purpose technologies with subject-specific content. This research sought to showcase how general-purpose tools like Wikis can be more directly paired with discipline-specific/content-specific tasks through guided scaffolding.

The design-based approach sought to offer an exploration of the cognitive scaffolds and their most effective format to support alignment of commonplace technologies and subject-content.

The research methodologies were employed to generate a deeper analysis of best practices around hard and soft scaffolds to support student achievement, and in turn to inform future development of assignment sheets, rubrics, and handouts that maximize civic engagement.

A collection of research has recognized the direct value of civic engagement among adolescents-- especially when speaking to their ability to create change in the world or even to better understand and participate within their school community. One can, however, understand the concept of participatory culture described in the first chapter in a richer way by locating it in the intersection of civic engagement and social media.

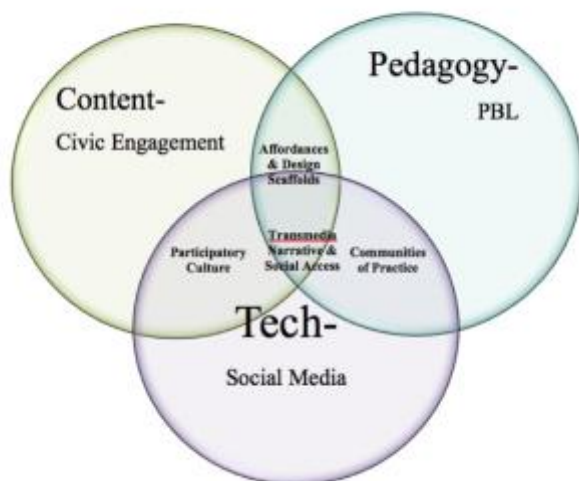


Figure 3. TPACK Lens for tech, PBL, civic participation intersection.

Theorists like Henry Jenkins have consistently urged people to look at the way in which adolescents are activated toward greater levels of civic participation by their experiences in the

virtual world with its low barriers to participation. Jenkins valued social media and participatory cultures for its ability to spur adolescents to greater levels of civic engagement.

This VORC project research focused on providing the supports needed to harness the power of these online tools to support the forms of civic participation of which Jenkins and the Common Core suggest are warranted in the contemporary classroom.

Research efforts like the John D. and Catherine T. MacArthur Foundation Series on Digital Media and Learning have funded investigations into the civic life of adolescents and digital media and brought the connections between teaching, technology, and subject-content into clearer view. When Jenkins' team spoke of transmedia navigation, collective intelligence, and networking, they also addressed very clear examples of how these skills might look in an educational setting. The Common Core State Standards asked for the clear development of new capacities in students to conduct disciplined research and engage in appropriate digital outputs.

TPACK offered this researcher a unified way of examining how such skills can be best developed in the secondary classroom setting— especially when applied to problem-based inquiry activities. A research of the literature suggested that students and teachers get the most out of mobile technologies, new media literacies, and inquiry-based methods when appropriate hard and soft cognitive scaffolds are in place. This VORC project research, as described in chapter 3, was proposed because it allowed a process-oriented procedure to further define the needs and refine best practices support documents associated with supporting students through such curricular units.

Chapter 3: The Methodology

Overview of the Method

The focus of the research. Chapter one showcased how the participatory cultures of the online world bring youth into a range of very academic pursuits that offer challenge and intrigue. The real world has made writers and gamers, politicians and media producers of teens by activating their civic participation. However, school settings often have not.

The second chapter weighed the challenges of innovating classroom teaching, especially as pertains to technology and hands-on learning strategies. Two key concepts that emerged in the literature were the vision of TPACK as a means engaging in a reflective professional development practice and scaffolds as pedagogical technique for supporting students through complex classroom innovations. A range of the literature extols TPACK to develop a rich description of complex classroom innovations. Within that literature, select research (An, 2010; Hug et al., 2005; Saye & Brush, 2002; Simmons & Clark, 2005; Stevens & Brown, 2011; Swan & Hofer, 2011) held up cognitive scaffolds as a key to supporting students through such innovations; hard scaffolds of assignments and rubrics were suggested to guide students' activities and soft scaffolds of training and support documents are advised for providing ongoing touchstones.

The methodology used in this research project applied design-based research as a means of beta testing and then refining hard and soft scaffolds that the researcher believes will serve as an ongoing curricular tool to support the infusion of technology into secondary classrooms that value problem-based learning.

The Voices of Representation project offered a technology-infusion unit for the teacher to embed in relevant social studies content. Although in the case of this research it was embedded

within a unit specifically on local oral history collecting, the researcher presents a unit that could embed in any social studies content that asks for civic involvement activities with residents, activists, or governmental officials beyond the school's doors.

To this end, the Voices of Representation project defined for participant teachers and students an approach to develop a portfolio of information gathering through oral histories—a core social studies technique that can be applied to any specific historical topics. The VORC unit offered a rubric, an assignment breakdown, and how to scaffolds which the course's teachers can use as both a planning tool and a teaching tool.

The research site's receptive administrative and pedagogical team's commitment to progressive education provided an ideal open laboratory to apply TPACK as a lens to better understand the classroom innovations that occur during design-based activities. The VORC unit engages students in developing a new media presence as a product of disciplined research into two contemporary historical events. Students were provided cognitive scaffolds to support their development of digital resources that will be shared beyond the classroom. The unit engaged students to communicate with resources outside the classroom in an effort to conduct disciplined research. The unit asked students to integrate the research activities the teacher is assigning into forms of digital output that offers students the expectation to use social media and digital tools to practice inspiring social documentary. It embraced the contention of researchers like Henry Jenkins who see the digital tools as closely connected to increased civic participation among young adults.

Embedded in the unit was *scaffolding* to support students in cognitively conceiving of what goes into creating a high-quality product and practicing the required skills in an authentic way that takes them beyond the classroom doors. Hard scaffolds, such as the project rubric and

unit plans, provided students with a clear vision of what academic behaviors are expected of them and how they should engage in participatory activities. Soft scaffolds, such as training videos and best practice handouts, offered students a very practical understanding of the digital and technical skills that will support them in this journey.

The research had not analyzed individual students' development or look for causal or association relationships. The research focused on the curriculum and used a design-based process to fine-tune the curriculum. The researcher proposed but then removed an anonymous online survey on self-perceptions regarding academic uses of technology for student participants from the process to restrict the focus to the design improvement of the scaffolds.

As described earlier on page 110 and 111, students were introduced to scaffolds in late December 2014 that defined and supported two sets of project requirements—due respectively in early/mid-January and at the end of January. The first iteration of the scaffolds provided students support around the technological tasks and social studies writing tasks that teachers were evaluating. After teachers presented the reviewer with the student work as assessed using his rubric, the researcher noted aggregate trends of student academic struggle. A second iteration of scaffolds was issued digitally within the week, providing students the additional supports to meet the master standards espoused on the rubric.

This research project sought to better understand pedagogical and curricular techniques that enhanced civic participation among high school students. Problem-based learning, detailed in the second chapter, has provided higher education and K-12 students a learning by doing approach to build students' rich connections with authentic tasks. For this researcher, the problem-based challenge of having to conduct oral history interviews in the larger community

provided students a curricular model that required students to extend their academic work beyond the school's doors.

Likewise, social media and technology tools provided adolescents the opportunity to embody their civic participation in a digital form that can be shared and promoted on a global level.

Evidence from Henry Jenkins' 2006 book *Convergence Culture* and 2009 MacArthur White Paper along with the Pew Research Institute presented in the last two chapters showcase the powerful connection that technology affords teens to share in naturalistic learning communities shaped by affinity and practice. Social media and ubiquitous technology tools applied to the social studies classrooms in this research project supported students in engaging with democratic processes in the world outside the school's walls.

Specifically, this research focused on digital tools— the integration of multimedia software and web-based technologies to support student's disciplined social studies work and knowledge. The research recognized that despite the prevalence of options to edit movies, share Wiki content, tweet, share Facebook likes, or design brochures and web pages, that teachers do not necessarily have a clear sense of best practices to maximize students' use of these. As discussed in Chapter 2, it is often the general nature of these tools that contributes to educators' and students' muddled sense of how they are to be integrated into the process of subject-content learning. For example, classroom teachers at various grade levels have engaged students to build a wiki to showcase learning on a book, a research activity, or a portfolio of their own work with students muddling through the activity contributing little.

Past research has told us that students and their teachers may not be clear how individual and communal expectations are to play out. The cognitive scaffolds beta tested and revised during this research process aimed to offer curricular assistance to bridge that gap. This research

project used a curricular unit with an Assignment document and a Student Work Assessment Rubric as tools that possess, in and of themselves, a designed or built-in pedagogy which he believed would support a clearer vision for the road to work completion on the scale and scope intended. Likewise, the research entered into the research with the premise that the four soft scaffolds would provide students clarity and standards around expected work output.

This research applied a design-based research methodology to refine a proto-typed civic participation project curriculum that develops students' new media literacy through technology tools. Put simply, even if past research predicts that hard and soft scaffolds are important, this researcher felt the need to use an iterative design process to develop a deeper understanding of the classroom elements that are maximally effective for the scaffolding process.

The selection of a site. Previous experience working with an long-standing innovative public school led the researcher to investigate it as a potential site. Given the school's pedagogical leanings, performance-based assessment, non-mobile student population, and successful past technology integration efforts, the researcher felt it was a great candidate as a research site for curricular design-research. Part of effective research-practice partnerships is the alignment mission. The University of Michigan/MIT Media Lab Artemis/Thinking Tags (Hug et al., 2005) research and the Learning by Design earth and physical science research (Kolodner et al., 2003), detailed in the survey of the literature, showcase the innovative design-based research activities that can happen when educators and researchers partner.

As this research project focused on bringing together problem-based learning, technology, and social studies within a design-based experiment, there are a limited set of public secondary school settings that align in values and resources orientation. The block funding provisions of the United States' Congress 2001 Elementary and Secondary Education Act

nicknamed No Child Left Behind and its policies have dominated many school districts during the first decade of the twenty first century, leaving standardized test preparation as dominant classroom presence. Despite a recent shift toward a Common Core State Standards aligned performance testing, many high schools have still not fully turn-keyed professional development and elaborated and implemented the recommended changes. As a result, school districts have remained leery of focusing resources in areas other than preparing students for state-level testing— old or transitional.

That said, this research project needed to narrow down its selection to a school site that already had a compelling commitment to learning innovations— prizing the value of students' experiential learning by doing. The Coalition of Essential Schools has long contained a wide-berth of schools with these value systems. Drawing on the intellectual principles of John Dewey and TheodoreSizer, Coalition schools have ascribed to 10 Common Principles (Coalition of Essential Schools, 2010) customized by the school's design team and implemented as best practices. This researcher had the benefit of working for many years at a Coalition school, one that sits as part of a first generation of small schools within its city.

That school was identified and proposed to the local department of education's Institutional Review Board as a research site. The school site has drawn its admissions from all areas of the school district, screening all candidates. Based on its lack of specific bilingual or dual-language programming, the school has traditionally had almost no English Language Learners population. With approximately 10% of students having an Individualized Education Plan, it has offered an approach to special education and IEP needs consistent with the state's option of multiple periods per day of special education support to empower students in a mainstreamed heterogeneous non-tracked classroom.

The school possessed curricular freedoms due to its long-term participation in a state recognized waiver to allow a performance-based assessment approach. It participated in this waiver as part of a district-sized collaborative of schools. The waiver has allowed the school to maintain the freedom to develop original curricula aimed at supporting students through the critical thinking, the elaborated writing, and the sustained research involved in these tasks. The school's performance-based assessment tasks have been reviewed annually from their cohort of schools to establish the inter-rater reliability of this *authentic assessment* approach to the state.

The research value of design based interventions. As detailed in the previous chapter, design-based research offered this research a model for the investigation of classroom phenomenon that retains robust information while seeking to connect specific observed practices to a more generalized framework. Such a model has allowed researchers to progressively develop innovations in great detail and then share with others in a way that allows them to “recontextualize the theory-in-context with respect to their local particulars” (Barab, 2014, pp. 156-157).

In this research project, there was tremendous value in using the method to pilot an approach to increasing students' civic engagement around their subject content by bringing hard scaffolds and soft scaffolds into the classroom. The design-based research process afforded the opportunity for the classroom to serve as a test-bench at which these techniques can be implemented and efficiently refined into a more final form. Within the two month period of the research, a group of just over 40 students and their two participating teachers generated meaningful qualitative data that supported the refining of the research project's scaffolds.

The distinction between research and regular classroom activities. At the research site, the school and its teachers had set an existing goal to focus their curriculum around increased civic participation, to develop students' critical understanding of the complex local and global social

justice issues and to better understand their individual role in creating change from the local level to the national or international level.

The Voices of Representation Curriculum (VORC) project offered the school and two teachers a social studies unit that could be integrated into any class. The research site's existing high school curriculum supported several hands-on activities: a visitation to city council members, a collaborative design process of proposed funding documents for review by former city council staff, student-directed exploration of national lobbying issues and organizations, a visit to Washington D.C. to meet with legislators and lobbyists, and interviews with local activists around issues of civil liberty and rights.

The VORC integrated with such a model, provided an additional digital portfolio element, through which students were guided to capture their research and their personal understanding of the material in a socially shareable way. The VORC provides enhanced teaching and scaffolding of relevant social studies skills in a manner that enhances the course, without necessitating teachers to alter the way in which they are teaching. It provides a stand-alone enhancement that models best practices without overtaking the course.

Given the nature of assessment at the school, it was expected that after this VORC unit is complete, students would likely present their findings in a face-to-face manner. The VORC provided an approach consistent with the common social studies expectations that teachers require of high school students—the ability to highlight sociological, political, economic, cultural, and spatial impacts. The VORC utilized the Social, Political, Economic, Cultural, Spatial (SPECS) acronym and related imagery of lenses to support students' memorization and integration of these contextualizing skills.

The VOR project and scaffolds were anticipated to serve as a bridge between the course's initial explorations into civil rights battles and the course's end-goals of students going beyond the building to interview activists who have lived through the fights for social change.

The Research Design- Cycles of Investigation

As indicated in Chapter 2, this research data-collection process was designed to occur during the late fall 2014 semester. This process was designed to allow for there to be two iterations of the Voices of Representation curriculum project scaffolds, with opportunities for analysis as captured in the figure below.

The first iteration. This research was originally scheduled to start its interaction with students in September or November 2014. This timeline was ultimately adjusted to allow for teacher participants availability to engage in the research. Consent matters were scheduled to be conducted at the site during November 2014 and early December. Scaffolds from the Voices of

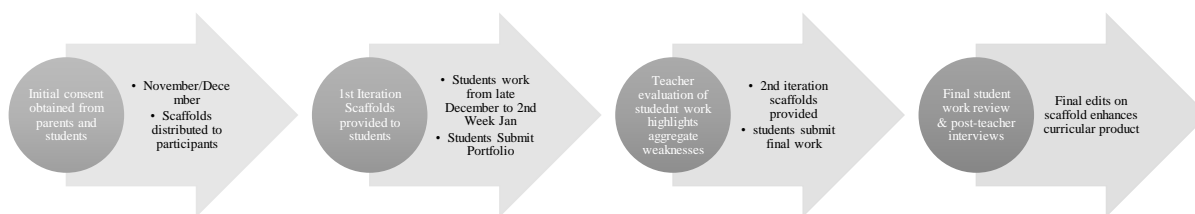


Figure 4. VOR research cycles of investigation overview.

Representation Curriculum were provided to participating faculty and students in December. It was proposed that students would make use of these curricular hard and soft scaffolds during December, submitting their portfolio by early January of new media content specified in the hard scaffolds, and embodying practices clarified in the soft scaffolds. The project scaffolds requested students to submit this work for teacher evaluation digitally. The researcher proposed providing the participating teachers with the VOR-Student Work Assessment Rubric and making

them familiar with its usage. The teachers were asked to evaluate the student work using this rubric and provide filled out rubric sheets to the researcher. This process was aimed at having the teachers evaluate the degree to which each student portfolio embodied the mastery performance criteria of the Common Core State Standards and Jenkins literacy skills identified in the earlier chapters.

The Voices of Representation Student Work Assessment Rubric (VOR-SWAR) provided a document scheduled to be used twice during this process, to assess the student work product submitted as supported by the iteration of the scaffolds. This rubric, attached in Appendix A, provided a consistent assessment tool to examine the student work for evidence of students demonstrating the CCSS/Jenkins skills.

Initial analysis and the second iteration. In January, the teachers evaluating student work having shared the rubric cover sheets, stripped of individual identity, would thereby be providing the researcher with the opportunity to explore aggregate descriptive data that captures the whole grade's relative success in meeting the 10 dimensions of the VOR-SWAR— built specifically around select Common Core and Jenkins standards relevant to the research. Noting these trends, it was proposed that the researcher would modify these scaffolds and provide these to students in mid-January, to enhance students' capacity to demonstrate these skills in their second set of portfolio content.

It was anticipated that a thoughtful analysis and iterative revision process around the cognitive scaffolds would have resulted in student gains around increased civic participation, further implementation of digital technologies, and more detailed meta-cognition around problem solving and exploration of content knowledge.

Students' submissions of their VOR Portfolio v 2.0 at the end of January 2015 was anticipated to provide the researcher final information which along with a post-research teacher participant interview, could inform final adjustments in the scaffolds.

In the spirit of design-based research, it was anticipated that the details of this process would provide the qualitative data to inform chapter four of this document, thereby capturing details that can be generalized toward developing a theory.

The Scaffolds: Their Function, Their Philosophical Underpinnings, and their Application In Data Collection

The scaffolds being refined. This research project focused on developing more effective and refined curricular scaffolds to support students through a process of increased civic participation in their high school content area. To do this, a design-based process supported the researcher in revising these changeable elements— namely the scaffolds themselves.

There were two hard scaffolds that were utilized across iterations, a VOR Student Work Assessment Rubric and an Assignment sheet. The researcher put forth the premise based on the research stated in chapter two that giving students access to these documents, provided them the cognitive and curricular scaffolds that allow them to gain a much clearer picture of the specific expectations that are being asked of them.

The VOR Student Work Assessment Rubric provides a breakdown of specific expected skills that it is hoped that students can actively demonstrate in their project portfolio. The VOR *Assignment Sheet* provided a timeline and description of the structural elements expected in the assignment. These tools provided teachers, students, and parents a visible thought space to shape clear expectations about the skills and expected content of that portion of the course. These documents were anticipated to clarify the standards by which the student work would be judged.

The four soft scaffolds represent an effort to support students' increased comfort and access to social media by engaging them at once in two key affordances of social media. First, the technologies allow students to view digital content that provides how to explanations of what they are in turn expected to do themselves. Second, the experience of viewing and learning through online resources that are targeted for them instructionally models the concept of using the social media medium for just such effect with the public beyond the school's walls.

As explored in chapter two of this document on page 97, the four soft scaffolds offered a detailed set of how-to modeling—providing students tutelage on topics like uploading and downloading their work, embedding and linking materials onto original Wikispace pages, conducting oral history interviews following best practices, and providing a range of analysis and commentary on the collective efforts to conduct interviews. These segments made use of digital online media tools and were available for the student to use both during class time and at their own leisure—to repeatedly take in the tools of support from their teachers and technology specialists.

Unlike the hard scaffolds' presentation of project boundaries, the soft scaffolds were designed to offer an exemplar through providing direct guidance to students as to the steps involved in generating a successful portfolio product. The soft scaffolds were meant to portray what elements of the successful product will look and sound like.

The researcher believed that these soft scaffolds provide an important complement to the definitions and expectations offered by hard scaffolds. The researcher anticipated the design-based format of the research would highlight the ways in which these scaffolds hold together as a unit. The analysis of student work by rubric as an aggregate collection was proposed to help the researcher determine collective areas of strength or weakness in students' end-product, when

relying on the scaffolds to establish expectations. This researcher looked at these features under the premise that such curricular success would represent a model of effective alignment of technology, pedagogical techniques, and content knowledge through the scaffolds.

The rubric used to assess student work and inform scaffold revision. As described in both chapter two and this chapter, design-based research activities were used to assess student work, and in doing so, help the researcher to refine the Voices of Representation Curriculum (VORC) scaffolds to provide students more effective guidance.

The desired goal of this project and these scaffolds was to support participants in achieving increased civic participation and in effectively using technological and pedagogical tools in the course. The scaffolds were the *changeable* element of the research project— and they were set to be refined after the researcher reviews and analyzes participants’ content and feedback. Chapter 1 and 2 respectively offered details about Common Core and Jenkins standards that are particularly relevant as elements of a new media literacy to help students transverse the narrative environment of social media.

To narrow the total possible collection of literacy skills that might be analyzed during this research, the ten specific dimensions discussed earlier were selected by the researcher and synthesized into a single rubric to analyze student work from two distinct practice-based sources— the Common Core State Standards Initiative’s English Language Arts Reading, Writing, and Social Studies, Sciences, and Technical Subjects standards (NGA, CCSSO 2010) and the MacArthur Foundation White Paper “Confronting the Challenges of Participatory Culture: Media Education for the 21st Century” (Jenkins et al., 2009).

The former source has been a nationally recognized anchor document that has become the guiding new curricular standards in almost every state in the nation as of 2013. The latter

document represented the work of Henry Jenkins and a team of researchers, drawing on the collective range of comparative media, sociological, and educational technology research to define an exploratory set of 21st century new media literacies.

The common core state standards selected describe a focus around a demonstrating a skill-set in which adolescents show capacity to understand the affordances and credibility of online resources, conduct independent research tasks, develop elaborated written and digital resources that document their findings, and communicate these findings across media in a compelling manner.

The Voices of Representation Student Work Assessment Rubric specifically focused on the ten dimensions detailed earlier, drawing its new media literacies, research, analysis, and presentation skills from the Common Core State Standards (NGA, CCSSO, 2010) and Henry Jenkins MacArthur White Paper (Jenkins, 2009). The researcher selected three dimensions from Jenkins that address student performance elements of civic participation, disciplined problem-based inquiry, and networked technological infusion to support subject-content.

The researcher selected seven Common Core State Standards that represent what amounts to the closest vision that the United States currently has on the 9th and 10th grade anchor skills that bring together the implementation of technology for researching and sharing relevant social studies policy analysis, thesis development, and position paper skills with the requisite English language arts skills of disciplined research and analytic writing.

The three Jenkins dimensions selected represent the new media literacies which most speak to adolescents' abilities to navigate the information superhighway efficiently, to build virtual and actual connections through sustained community-based practices, and to construct their own meaning and narrative in the world by developing hands-on content which tells its

story through multiple media. In this way the Jenkins elaborated skills-sets complement the Common Core standards selected as evidence of students' ability to meet all of the technological, pedagogical, and content knowledge ideals suited for this investigation.

The values embedded in the rubrics and scaffold revision. For the purposes of this research, there were 10 dimensions given key status by their placement on the VOR project rubrics used to guide and analyze the hard and soft scaffolds. These 10 dimensions were cultivated from the Common Core and MacArthur White paper described above. Selected from much longer documents, these ten dimensions are by no means the only items that could have been chosen. These items were selected as they represent a range of new media literacies that showcase a student's ability to communicate across digital media— researching, analyzing, and sharing their findings in a civic minded manner. Enclosed below, is a *researcher code book* to offer a bolded *brief code name* that summarizes the dimension from it's larger description offered here and in the earlier chapters. These shorter bold names and brief descriptions will be used on rubrics and scaffold documents rather than the more elaborated description.

These ten dimensions were summarized as:

- CCSS A- Sustained Research to Synthesize an Answer to a Question or Problem
- CCSS B- Analyzing the Political, Social, or Economic Aspects of History/Social Science
- CCSS C- Comparing & Contrasting Multiple Primary and Secondary Source Treatments
- CCSS D- Developing Discipline-Appropriate Claims and Counter Claims with Appropriate/Applicable Use of Formatting, Graphics, and Multimedia

- CCSS E- Write Informative/Explanatory Texts Capturing Historical, Scientific, or Technical Processes with Appropriate/Applicable Use of Formatting, Graphics, and Multimedia
- CCSS F- Using technology and the Internet to Dynamically Produce, Publish, Share and Display Information
- CCSS G- Gathering Relevant Authoritative Print and Digital Sources Effectively, Assessing their Usefulness, and Integrating without Plagiarizing
- Jenkins A- Collective Intelligence
- Jenkins B- Transmedia Navigation
- Jenkins C- Networking

These ten dimensions lent a specific operational grounding to the exploration of product change. It was believed that the explicitness of these scaffolds in their appearance on hard scaffold and skill-training in the soft scaffolds will support their skills being a more transparent academic element to teachers, students, and parents— a more intentional part of the curricular process. This premise drew from the chapter 2 research items that spoke to the needed consideration of the technological pedagogical dimensions— the recognition of the changes in teaching approach that grow out of the integration technology.

These dimensions were believed to allow for an operational interpretation of the student work documents, looking for specific performance-based evidence. In this way they sought to assist in the alignment of the student work product expectations with the mission and vision of civic-minded engagement, progressive inquiry-based learning techniques, and constructionist technology interventions. In addition, they offered specific and evidence-based skills about which the researcher may examine student work and question teacher participants. The Voices

of Representation Student Assessment Rubric used to evaluate student work broke down a differential assessment of each dimension. A sample of this rubric is contained in Appendix A of this document. The rubric's format was impacted on by the period of time described earlier as a period of action research previously completed at the research site.

Most specifically, the research site uses a model of grading that eschews letter or number grades. Teachers at the location grade students by the degree to which a student has or has not met standards associated with the course. To be applicable to this model, the rubric identified both mastery standards which are being evaluated on that row and then provided a bulleted description of what might constitute each grading level. Although the rubric does not include an interface to traditional grading, it could easily be connected to a more traditional A-F grading system as well based on the use of 5 gradients, provided the school in question supported the use of rubrics.

The operational definitions of the ten dimensions. The researcher saw operational definitions as important to the teacher analysis, the consent process, and the research itself, that there be established definitions. Student work deliverables were to be analyzed by the teachers and researcher using the VOR-SWAR rubric at midpoint and endpoint of the research process across the dimensions described below.

For the dimension of *CCSS A: Sustained Research to Synthesize an Answer to a Question or Problem* (NGA, CCSSO, 2010) the researcher identified that:

- Students develop and pose essential questions regarding their real-world topic of inquiry;
- Students collect their research in digital form in efficient and readily available ways with proper annotation;

- Students record a meta-cognitive review of their research steps and thought process during research.

For the dimension of *CCSS B: Analyzing the Political, Social, or Economic Aspects of History/Social Science* (NGA, CCSSO, 2010) the researcher identified that:

- Students document their analysis of readings by sharing their understandings of the SPECS (social, political, economic, cultural, and spatial/geographic) conflicts/policy issues present in these sources;
- Students elaborate on SPECS elements by labeling and explaining key stakeholders, concepts, and underpinnings;
- Students use proper social science phrases to communicate SPECS conflicts and policy issues.

For the dimension of *CCSS C: Comparing & Contrasting Multiple Primary and Secondary Source Treatments* (NGA, CCSSO, 2010) the researcher identified that:

- Students discern and describe the positions/perspective that their primary and secondary sources take toward their content;
- Students contrasting sources based on potential bias, primary or secondary status, and the context through which the sources were obtained;
- Students outreaching to additional sources, including subjects involved in the social and policy activities, if possible, to compare and contrast the information of written documents and lived through materials.

For the dimension of *CCSS D: Developing Discipline-Appropriate Claims and Counter Claims with Appropriate/Applicable Use of Formatting, Graphics, and Multimedia* (NGA, CCSSO, 2010) the researcher identified that:

- Students include a thesis argument that is comprised of three cohesive assertions;
- Students address a counter-argument grounded in evidence which they then appropriately dismiss through applying logic;
- Students enhance the logical chain of the argument through selective and creative use of formatting, graphics, and media.

For the dimension of *CCSS E: Write Informative/Explanatory Texts Capturing Historical, Scientific, or Technical Processes with Appropriate/Applicable Use of Formatting, Graphics, and Multimedia* (NGA, CCSSO, 2010) the researcher identified that:

- Students annotate sources to reflect a succinct explanation of the key discipline specific SPECS details contained within the research;
- Students capture the big ideas and SPECS themes through appropriate use of charts, tables, graphics, and other visual techniques;
- Students locate, analyze, and document their use of graphs, data charts, and multimedia to evidence from their source material.

For the dimension of *CCSS F- Using Technology and the Internet to Dynamically Produce, Publish, Share and Display Information* (NGA, CCSSO, 2010) the researcher identified that:

- Students maintain a regularly posted running record to capture their understanding and inquiry process;
- Students use hyper-linking techniques to effectively create a portfolio effect to allow a user to quickly navigate around the information they have developed for their project;
- Students summarize succinctly the *big ideas* of their project via social media/

For the dimension of *CCSS G- Gathering Relevant Authoritative Print and Digital Sources Effectively, Assessing their Usefulness, and Integrating without Plagiarizing* (NGA, CCSSO, 2010) the researcher identified that:

- Students include a range of usable findings located from multiple print and digital sources located over a period of time;
- Students capture the process of researching by documenting the challenges incurred during research;
- Students cite their research using a combination of paraphrasing and quotations.

For the dimension of *Jenkins A- Collective Intelligence (2009)*:

- Students collaborate with peers, educators, and outside experts' work through online environments;
- Students evidence the use of online tools to ask and pose questions and gain support from peer-to-peer efforts;
- Students incorporate resources pooled from the research efforts of other individuals involved in social studies outside of the school.

For the dimension of *Jenkins B- Transmedia Navigation (2009)*:

- Students generating a public information campaign that includes evidence-based information shared through a range of social media;
- Students support a coherent position with evidence by weaving a narrative throughout multiple media;
- Students demonstrate a sophistication in their selection of the most appropriate medium for individual pieces/formats of their message.

For the dimension of *Jenkins C- Networking (2009)*:

- Students incorporate specialized content from specialized sources gathered through targeted research efforts that extend beyond ubiquitous sources, that is they do more than just use Google;
- Students obtain feedback via social media from students not in their class section, the larger school community, and with participants beyond the school's doors;
- Students interact with individuals beyond the school's doors in acts of civic participation through their sharing of ideas via social media.

Maintaining reliability in the use of the VOR-SWAR. To support reliability in the implementation of this rubric, the researcher and the participating teachers scheduled several meetings during which they would achieve *calibration* by exploring the rubric and discussing the expected ways in which students might demonstrate mastery of these areas.

The anticipated value of engaging the researcher and both teacher participants to discuss project expectations and assessment was three-fold. It firstly provided confirmatory opportunities to understand the evidence which participant educators expected—thereby shedding light on the emic and etic interpretive perspectives that might differ between researcher and participants.

It secondly built an opportunity for the participant teachers to develop their capacity, a feature that might allow them to maintain the value of this research approach in the future of their careers and the site. This helped to actuate one goal held by some design-based researchers to contribute positively within the space of research by helping to contribute to the building of a larger theoretical space.

It thirdly created a more collaborative climate that supports the research activities as being an integrated experience for the educators and students within the course, rather than an obtrusive external element.

The Data

Points of collection. This research focused on the curricular artifacts generated and collected during an approximately five-week period during which participating students at the research site are engaged with the Voices of Representation project. In one sense, the participant teachers and students are creating artifacts for collection throughout that entire period. Materials developed will be slowly combined into two digital portfolio sets.

There are two distinct points in the proposed research methodology at which data is collected within this research methodology. The first data collection was aligned early in the process— after participants had given consent/assent, when they had made use of an initial set of researcher designed scaffolds as the basis of which they formally submitted their first portfolio of work. The portfolio was to be assessed using the VOR-SAR. It was this data collection point that was designed to provide the aggregate data that most directly informs the second generation of scaffolds.

The final point of data collection was to occur after the student participants formally submit their second portfolio of work. The portfolio of work would be once again assessed using the VOR-SWAR—with teachers reporting their findings. The data collected from the student work was to be accompanied by a post-research teacher interviews occurring during this period. The teacher interviews were to be utilized primarily to provide a potential confirmatory analysis of trends in participants' perceptions of the value they saw in the scaffolds and the work process.

The Data Sources. This research used two major sources for its data: two student portfolios and a set of one-on-one teacher interviews. Each of the data sources was designed to contribute different information and elements to the overall research process.

There were two portfolios of student work to be submitted. One was to be collected as the mid-point data collection point and one at the end of the process. Each provided direct evidence of students' performance response to the tasks as laid out in the scaffold documents at different stages. Each submission of student work was to be followed by an analysis of the student work content using the VOR-SWAR rubric. At the mid-point, the resultant data was to be used in its aggregate form to inform alterations to the hard and soft scaffolds used with students. As described earlier, to find evidence of each of the ten dimensions in the student work, the evaluators of student work were to use the VOR-SWAR rubric to analyze students' success in evidencing the mastery skills involved in these ten dimensions.

The one-on-one teacher interviews scheduled to occur at the end of data collection were anticipated to serve as a confirmatory and complementary opportunity to expand on perception of trends in the integration and application of the scaffolds. The interviews were important to the researcher in that they represented a meaningful opportunity for the participatory teachers to maintain voice and have an ongoing investment in the research process.

This researcher has consistently valued the way in which such processes provide respect to the teachers as competent professionals within the education field who are equal participants by virtue of the great content-specific materials that ground the course in which the Voices of Representation Curriculum unit is placed. In addition, the interviews were anticipated to help cement the teachers' own journey within the process of building their capacity and considering future implementations of similar projects.

The Curricular Product

It was anticipated that the research process—with its two iterations of scaffolds and two sets of student work to analyze— would provide the researcher with qualitative data pertaining specifically regarding the apparent interplay of scaffolds and resulting work. The ultimate expected product of the entire research process from November 2014 through March 2015 was anticipated to be a revised form of the Voices of Representation Curriculum which could be made available for future teachers or researchers interested in these approach to scaffolding student learning.

Considerations for Human Subjects

This research sought and received an exemption from the university Institutional Review Board. The application for exemption relied on content from Appendix B of the Investigator Manual in §46.101, under section b-1 as it takes place in a traditional education setting involving normal educational practices and it involves research on educational practices, instructional techniques, and classroom methods (United States, 1990). This research proposed a curricular-design project and the participant students are not the unit of analysis. The student work and its teacher evaluations reviewed within the proposed research process were parallel to the kind of chart reviews that might be conducted in a medical facility. The resultant dynamic of reviewing data product separated from individuals establishes the threshold of their being no more than minimal risk for human subjects based on their indirect involvement.

The research's interaction with human subjects that are minors was limited to the collection of aggregate data regarding the analysis of the students' work and not their own individual change conditions. Families of the students involved were provided informed consent about the curricular nature and design of the research project and provided the option to exempt

their child's documents from being counted within the research procedures. Students were asked to assent to their involvement after their parents had provided consent. Faculty members participating in the project were provided informed consent and were offered the additional benefit option to be credited by name if they so wish as educators participating in the practice research. The researcher incorporated a similar request of the city's department of education IRB committee, and obtained district approval to research at the proposed site.

Ultimately, the methodology used in this research holds great consideration for human subjects because design-based research in this setting represents an attuned school-improvement method that supports educators in their own educational practice improvement process by producing rich site-specific detail that may in turn be a starting point for developing theories.

The research process additionally offered greater curricular benefit to all participants present and future within said school site, as the curricular refinement focused on the increased alignment of technological, pedagogical, and content knowledge—all aspects of the rigorous teaching central to the school's core academic pillars and essential academic mission.

As the research site was a well-established school that is functional by all local and state quality review measures, the research activities provided no harm to students' experience of receiving high-quality teaching throughout the process. The research simply complemented the existing work of the teachers, modeling the research site's existing commitment to university partnerships, and building further capacity among the teacher participants.

Additionally, this research was consistent with the research site's long-standing trend to collaborate with local universities and educators to enhance teaching practice. The site's involvement with this dissertation research adds additional benefit for the school to be able to

identify a connection to research being conducted under the supervision and approval of a nationally recognized higher education institution in this field.

This research initiative's design-based research approach truly allowed for tremendous social and educational benefits for its participations. The research approach embraced the affordance extolled by Sasha Barab (2014) in his publications as he argues that the model "improves learning for those participants in the study" (p. 155) due to its commitment to creating positive change in a program or service offered to those subjects.

In addition, as the research occurred almost entirely within the constraints of existing course activities and typical school procedures, it posed minimal risk, leaving only the possibility of boredom or wasted time among teacher or student participants who do not perceive the content of the curricular scaffolds to help further their academic goals.

Chapter 4: Research Iterations Around the VORC

Working with the VORC

This research applied design-based research methods to fine-tune the Voices of Representation Curriculum (VORC) model. VORC offered a curricular product that sought to enhance secondary students' civic participation in government by offering tools to support their documentarian efforts. This curriculum promoted oral history as a problem-based approach to studying high school history, and aligned it to Common Core and New Media Literacies. Students were provided supportive scaffolds that help them in the gathering, interpretation, and sharing of data. These scaffolds provided exemplars that support students in successfully completing assignments to quality completion.

VORC assignments directed students beyond the school building's metaphoric doors, having them create a virtual space in which external interviews are shared, individualized research compiled, researcher perspectives shared, and peer feedback provided. Applying the principles of problem-based learning, the VORC directed students to identify research areas, target research subjects, and discern arguments and counter-arguments among their sources. By design, this research set out to further develop high school students' new media literacies by showcasing how online environments can provide a medium in which students' real-world historical inquiries can be shared, critiqued, and developed as students engage in civic participation as modern historians. The Oral History Project (n.d.) has argued that, "Oral history is both the oldest type of historical inquiry, predating the written word, and one of the most modern, initiated with tape recorders in the 1940s and now using 21st-century digital technologies" (p. 1).

VORC used this signature social studies pedagogy to engage students as academic detectives of the lived through historical experience and engages them to inductively develop their understanding through personal play and discovery of real world testimony about contemporary history. This embraced the pedagogy of hands on problem-based learning envisioned by a range of educational thought leaders discussed earlier: John Dewey (1998); Maria Montessori (Bagby & Sulak, 2009); Deborah Meier and TheodoreSizer (Coalition of Essential Schools, 2010; Muncey & Mcquillan, 1993). In these learning models, students are able to incorporate their own doing and exhibition of their findings as a form of authentic assessment.

The last chapter detailed the methodological approach and the details involved in the execution of the actual process. The Voices of Representation Curriculum was presented to the two of the twelfth-grade history teachers at the research site during late November and December of 2014. VORC introduced the teachers to a model that applied the principles of TPACK to support a unified space in which the affordances of technologies could interplay with both the social studies signature pedagogies and some specific content knowledge involved in civics and participation in government.

At the core of the VORC was cognitive scaffolding. Much of the survey of the literature that informed the development of this research cited the mismatch of technology, pedagogy, and content knowledge. The results were often a lack of clarity and capacity-- neither teachers nor students understood exactly how the project was expecting to proceed.

This VORC consisted of both hard and soft scaffolding, delineated by both the hard structural elements which designed and conceptualized the students' understanding in broad built pedagogies and the soft more responsive scaffolding which supported the students through

timely assessment and development based on emergent needs for greater understanding (Saye & Brush, 2002). Based on the survey of the literature detailed in chapter 2, these scaffolds support the ability to better align the technology, pedagogy, and content knowledge involved in the academic study with the student learning process.

The analysis offered in this chapter documents the design improvements that occurred as a result of participant feedback and is aimed at increasing the robustness and effectiveness of the curriculum. The two participant teachers provided ongoing feedback through a series of face-to-face, phone, and texting conversations. This feedback was informed by their direct interactions with student end-users and incorporated both teacher concerns and student concerns as reported by these teachers. In addition, the researcher was able to engage in direct observation on one occasion of the teacher rolling out a scaffold to which participant students' reaction informed further design choices. In addition, after iteration one of the scaffolds had been rolled out, there were a series of data collection shaped by teacher gathered information and assessment which informed the second iteration.

These data points were used to fine-tune the scaffolds for their use in a second iteration. This chapter will detail the first and second iteration collection of data and the resultant design changes. Finally, this chapter will identify data collected in a confirmatory fashion after the second iteration changes.

Research Timeline

This research occurred during December 2014 and January 2015, conducted at a school location approved through the local education department's IRB and by principal approval.

Meetings occurred with the school's administration and the teachers who committed to the research process. Two twelfth grade history teachers agreed to the research occurring in their courses.

Materials regarding the research process, including consent and assent forms, were shared within the school community as per IRB approvals during December 2014. The first iteration of scaffold materials was distributed immediately before and immediately after the winter holiday break and New Year's Eve week. Students completed a set of assignment materials for their teachers, an initial portfolio of work, having worked with the scaffolds.

Although teachers did not follow through to the originally proposed research model of completing grading of the student work using the VOR-SWAR rubric, they did engage in holistic grading. They reported feedback to the researcher that was based in the categories on the VOR-SWAR and provided informed feedback on areas in which the resultant student product from the first iterations fell short.

The second iteration of scaffolds was provided to students in mid to late January to support students as they engaged in another cycle of oral history related activities. Students submitted their products to teachers and classmates online and engaged in an on-site presentation exposition on January 30, 2015. In mid-March, a confirmatory post-research interview was conducted with the teacher participants.

Shift from beta to first iteration. All six scaffolds existed in an original form of conceptual content and draft material-- designed as a curricular product informed from previous action research activities while the researcher was directly engaged in classroom teaching and collaborative curriculum planning.

The Voices of Representation Curriculum made use of both hard scaffolds with their built-in pedagogical structures and soft scaffolds with their emergent responsive student-centered nature. The beta format of these scaffolds included six distinct scaffolds- two hard scaffolds and four soft scaffolds. A chart below indicates the original content pages in process of design to offer soft scaffolds on best practices to students. As initial meetings with participant teachers occurred, conceptual changes began with many of the scaffolds resulting in the first iteration scaffolds taking a different basic format to support students creating a broader portfolio within the space of two platforms- Google Drive and Wikispaces. As continued dialogue with the participant teachers emerged perceived student/teacher concerns, a 1.5 iteration of the soft-scaffolds emerged.

Table 1.

Disaggregation of Beta Soft Scaffolds by Compositional Web Content

Original Design Beta Soft Scaffolds	Scaffold is comprised of these pages
Gathering Primary Sources and secondary sources beyond the classroom	WC- Tips for a Good Oral History Post a Prezi* Mini-Interviews Oral History Pinterest Board*
Sharing Your Research Digitally	Youtube style video Downloading Your Interviews WC- Upload your 3-5 Interview Videos
Presenting Content in Online Social Environments	Using Glogster to Capture Research Ideas Presenting Standards Through Prezi
Offering Online Analysis of Researched Work	Analyzing Your Sources Standards for Commenting

Although these were the originally planned content elements, a different vision quickly emerged inspired by the questions and concerns raised in initial integration meetings occurring in November and December 2015. What formed from these meetings with the teachers, was a

more refined Voices of Representation Curriculum (VORC) which embedded an iterative process for students to conduct oral history interviews. To support them across this process- a collection of two hard and four soft scaffolds were further developed.

The VORC curriculum hard scaffolds consisted of two distinct items-- an Assignment document and a Voices of Representation Student Work Assessment Rubric. The student work rubric was set to have no changes made throughout the process, to serve as a constant. The Assignment document was rolled out with information on the initial assignment work, with the intent of gathering data from teacher and student usage, to provide fine-tuning. The design intent of the Assignment documentation was to operationalize assignment actions and expectations in a way that would support students' clarity. The design intent of the Student Work Assessment Rubric was to provide students interested in self-assessment the opportunity to evaluate their own work against mastery standards.

Also under researcher were several soft scaffolds, supportive items for students that emerged from observational or formative feedback. These scaffolds were introduced in preliminary form to the participant teachers, who provided two forms of feedback that allowed for targeted alterations during the roll-out of these scaffolds-- teacher feedback and student feedback.

The soft scaffolds included several items which were intended to provide students support and provide both students and teachers anchoring in key Technology, Pedagogy, And Content Knowledge (TPACK) areas. Below is a chart of the four soft scaffold areas: Working with Primary and Secondary Sources Beyond the Classroom; Sharing Your Research Digitally; Offering Online Analysis of Researched Work; and Presenting Interactive Content in Online Social Environments. This chart reflects that for each soft scaffold area, between 1 and 3 digital

documents were created to provide students a direct 24/7 resources that clarify the process and depth of expected student submissions. Depending on the content materials and areas of focus, students may have received step-by-step screenshots for completion of the task, a checklist focusing on key process steps with further hyperlinked best practices, or a model of what conceptual questions a student should be answering in order to complete a well-thought out response.

Table 2.

Disaggregation of scaffold by relevant CCSS/Jenkins skills, content, and TPACK

Scaffold	Organized to Provide Support With...	Content Materials	TPACK area of focus
Gathering Primary Sources and secondary sources beyond the classroom	Best practices in preparation and execution of oral history interviews.	WC- Tips for a Good Oral History (http://oralhistoryinterviews.wikispaces.com/Tips+for+a+Good+Oral+History); Additional Tips from Willa Baum via UC Berkley Bancroft Additional Tips from The American Folklife Center Turning The Mini-Interviews into a Digital Collection http://oralhistoryinterviews.wikispaces.com/Mini+Interview+Assignment	Content Knowledge
Sharing Your Research Digitally	Techniques for the uploading and hyperlinking of original primary source research and hyperlinking of secondary and tertiary research	Youtube style video Downloading Your Interviews (https://drive.google.com/file/d/0B9yUcmnJbef3VHV3di1zWIFNdG8/view?usp=sharing); WC- Upload your 3-5 Interview Videos (http://oralhistoryinterviews.wikispaces.com/Upload+your+3-5+Mini-Interview+videos); Share Your Large Files (http://oralhistoryinterviews.wikispaces.com/share+your+large+video+files+from+Google+Drive+into+Wikispaces)	Technology

(continued)

Scaffold	Organized to Provide Support With...	Content Materials	TPACK area of focus
Presenting Content in Online Social Environments	Providing students with best practices and practical knowledge on commenting on documentarian content online	Editing Our Class Page & Developing Your Own Page http://oralhistoryinterviews.wikispaces.com/OWN+PAGE ; WC- Project Explanations-Offering Context/SPECS http://oralhistoryinterviews.wikispaces.com/Project+Expectations ; Using the Comment Function http://oralhistoryinterviews.wikispaces.com/using+the+comment+function	Pedagogy
Offering Online Analysis of Researched Work	Highlighting the analytic aspects of their own documentarian findings including assessment of sources; Providing substantive commentary on others' research work	Analyzing Your Sources http://oralhistoryinterviews.wikispaces.com/Analyze+your+Sources ; Standards for Commenting http://oralhistoryinterviews.wikispaces.com/Standards+for+Commenting	Common Core State Standards/ New Media Literacies

In our research, the scaffolds were released in two iterations-- with a focus on gathering data to support fine-tuning of the scaffolds between iterations. As the soft scaffolds are, by design, responsive to students' emergent understanding, the soft scaffolds experienced a stage we can call 1.5 in which they had experienced adaptation in format or delivery shaped by participant feedback.

Data Sources

Data from project participants and from researcher field notes was utilized at each stage of development. For the first iteration of the scaffolds, data sources included researcher design

statements; the *12G History Online Username Collection Survey*; teacher email/phone/text discussions; an aggregate review of student work; teacher email and discussions, and field note design journal entries from 12/8, 12/12, 12/17, 1/3/15, and 1/10/15. Particularly of note were face-to-face meetings with the teacher participants at their site on December 8 (RR), December 12 (MM), and Dec 17. In addition, a site visits to observe teacher RR and students on January 8 offered impactful feedback that impacted essential changes in the roll out of the first iteration of scaffolds.

Curricular Development During the 1st Iteration

Hard scaffold: VOR assignment sheet. According to the original design statement, the VOR assignment sheet was designed to “support students with hard scaffolding that makes visible the thinking process by laying it out in a step-by-step checklist the practices that will help them identify, conduct, and follow up on oral history interviews” (B. Schneider, personal communication, Nov 14, 2014). Initial teacher discussions in late November and on December 8 provided the opportunity to clarify the common understanding that students would produce two sessions of digital content to represent their work on conducting oral histories.

The drafted version of the VOR Assignment Sheet incorporated a number of specific elements: a quotation on the subject-specific value of oral history, direct content from two reputable web-based oral history projects, a timeline of student assignment deliverables, the “broken out” action steps or tasks involved in doing the activities for all interview stages, an empty-box checklist of “things I need to do for the interview process,” and an oral history release form (B. Schneider, personal communication, Nov 14, 2014).

At the initial face-to-face meeting on December 8, teacher participant RR (personal communication, December 8, 2014) shared that, “When I used oral history in this course before

the seniors didn't believe they can get something that big done in the time. They're overwhelmed with the other graduation requirements and I don't think the students will be able to see the value of doing the preparation pieces and will end up scrambling last minute."

The other teacher participant, MM (personal communication, Dec 12, 2014), indicated at the December 12 face-to-face meeting that, "Unless students find that it's easy to arrange their interviews quickly they're going to argue that it's impossible to do this with all of the college and internship requirements we have. They need to know that it feels more overwhelming that it is to complete." As a result of these two concerns, a design change was made to alter the *mini-interview* element that students were to originally conduct as preparation for the interview. In the new writing, it was instead described as an independent set of 3 10-minute interviews they would conduct among adults already part of their daily life around a high-profile contemporary issue that has affected a massive number of residents in their city-- with well-known local terrorism and weather events as key examples. This process was proposed with a deadline of interviews taking place over the break and digitization and sharing to occur after the break.

During a face-to-face meeting with both teacher participants they both expressed that they needed in the words of MM, "time after the assignment was due to account for students that just haven't completed the interviews and need more catch-up time" (MM, personal communication, Dec 17, 2014). Interpreting this request as a need for *wait time* in the traditional instructional sense, this researcher adapted the timeline on the assignment document to allow a full calendar week of time for the digital work that was to follow up the 10-12 days students already had to being the mini-interview process due to their break. To incorporate the ongoing decision-space teachers wanted around which software platforms/apps were to be used, the VOR Assignment Sheet indicated that elements due from the three software-specific work items would

be due on January 12th with digital details to be provided to students after their extended break. (personal communication, December 20, 2014, “VOR Assignment Sheet”).

The participant teachers were provided the VOR Assignment Sheet as a digitally shareable document during the weekend of December 20, 2014 for their review and usage with students on the following Monday and Tuesday. Teachers opted to share the scaffold with students via physical paper and conducted in-class discussions to review the scaffold’s content.

During Phone multiple phone conversations in the two weeks that followed a refrain was repeated captured in a phone call over the holiday break that, “students have one place to look for up-to-the-minute details about the project” (MM, personal communication, December 29, 2014).

On January 5th and 6th, 2015 the VOR Assignment sheet was adapted into a Wikispaces page designed to create an updatable web-based presence where all class participants could easily find a digital hyperlinked version of the handout. The digital nature of the Wikispaces-based assignment sheet allowed this *version 1.5* of the assignment sheet to incorporate direct links to other soft scaffolding elements, like “Turning the Mini-Interviews into a Digital Collection” that supported students as they generated the specifics of their digital portfolio. During the week of January 10-16, participant teachers took ongoing ownership, actually utilizing the tool itself on January 16 to reduce the number of required comment responses. The changed text read, “4. Leave comments on the Wiki page of ONE (1) student, TWO (2) students (from either section), commenting thoughtfully on TWO (2) THREE (3) of their videos and their analysis of the videos, using the following Standards for Commenting” (Schneider, 2015a, “Standards for Commenting”).

Hard scaffold: VOR SWAR rubric- The VOR-SWAR Rubric was provided to the teacher participants well in advance of the roll-out to students with the understanding that they were to share these with students alongside the VOR Assignment sheet. Aside from its expected role in the methodological data gathering, the design intention expressed in the VOR SWAR's instructional classroom usage was, "In this case, the use of a rubric with mastery standards listed is to offer students a specific idea of the traits which would be seen in a successful final presentation" (B. Schneider, personal communication, Nov 14, 2014).

The two teacher participants shared that they did not share these rubrics physically on December 22 and 23rd. After students returned to classes on January 3, the VOR Student Work Assessment Rubric was shared via the Wikispaces public portal. It was presented as a downloadable Microsoft Word document in a section marked, *Understanding The Project Expectations*. It was accompanied by the detail line, "*Check out the rubric used to grade you-* Check out the *rubric* below being used to evaluate your project submission for the Mini-Interviews Digital Collection" (Schneider, 2015a, "Understanding the Project Expectations").

The VOR SWAR was the only scaffold that was to by design, remain unchanged. This was due to its originally intended use as a tool with which teachers could engage in student work analysis. That aggregate trend data in students meeting categorical standards was to be used by the researcher as artifact to inform changes for iteration two, rather than teachers' verbal reporting holistic grading of students demonstrated understanding against these mastery standards. The rubric remained unchanged in this phase of the research.

Soft scaffold: how to collect & organize primary and secondary sources beyond the classroom. The design plan for the first soft scaffold involved, "[it's intent]...was to support students in shore up a transmedia narrative that captured big social studies ideas-- clarifying

procedural best practices for gathering content and showcasing it across digital platforms,” (B. Schneider, personal communication, Nov 14, 2014). This description might be termed as having a metacognitive goal-- one that provides a conceptual scaffold to support organization in a manner that would allow students to facilitate digital publishing. There were two elements in the original design of this scaffold: a best practices oral-history tip process and a platform by platform breakdown to support students in matching digital steps and subject-specific formatting. The two digital documents that comprise this scaffold are the following: *Tips for a Good Oral History* and *Turning The Mini-Interviews into a Digital Collection*. The first document contained best practices in arranging and preparing for an oral history interview and had been previously debuted/distributed with the assignment sheet. The second content piece shared a discipline-influenced method for organizing content knowledge research and adapting it across digital platforms. In its originally designed format, it included, for example, summarizing key details of their interviewees demographics to host in Pinterest and generating detailed breakdowns of Social, Political, Cultural, Economic, and Spatial/Geographic context within Prezi. In this sense, the scaffold was developed as an anchor to support teachers with the content knowledge called for by the tasks in which students would engage.

This scaffold had the most complex redevelopment during this first iteration phase, changing in both detail and structure from its original form. Debuted at the January 5 live launch of the Wikispaces public document and shared with the teachers for students’ usage the following day, this page went through 12 edits between January 10th and January 16th. The volume of design tweaks were made to address formative concerns that were informed by teacher communications on the evenings of classes via the phone, and through the researcher’s direct observation of teacher RR working with a class on Thursday, January 8th.

The teachers' brief phone calls expressed details of negative reactions and complaints about "You want us to sign up for two many sites," and "I don't want to get spam from all these programs" (RR & MM, personal communication, January 3, 2015). During the class session observed on January 8, students commented to the teacher on a series of questions or concerns they had with the originally proposed use of Prezi, Pinterest, and Facebook. Teachers had previously used online communication and a face-to-face visit on January 3 to collaboratively select these from a document of software options suggested by the researcher. Students expressed explicitly a range of concerned statements with the following getting many seconded responses:

I don't want teachers and parents having my Facebook username.
 Why can't we use Tumblr to write about these interviews?
 I don't want to give my information out to these websites.
 We have to do all this and Google drive too? I'm still learning how to do that.
 Why can't we put it all in one place? (Students A-D; personal communication, January 8, 2015)

RR pulled aside the researcher to ask a clarifying question about whether the Wikispaces platform students were using for information gathering could be utilized to support students' information sharing. After hearing an affirmation that students' work could be collaboratively edited in a social media manner and changes tracked, RR explored students' comfort in working with said platform.

Observing this interaction had a profound effect on the alterations to this scaffold, engendering alterations in identifying what software platforms were to be used but also reshaping an effort for all content to be organized within Wikispaces. This result rippled to other scaffolds, resulting in the youtube-style video on Downloading Video Files to be hosted dually in Google Drive and a displayable shareable embedded link in Wikispaces. It also reflected the challenges present when technology comes together with pedagogy and content knowledge. On

a practical level, students had concerns related to the affordances of social media technologies. Teachers, lacking specific familiarity, were stymied by how to respond to said concerns.

Teachers also expressed concerns about complexity of scaffolds, with MM (personal communication, January 9, 2015) having expressed that “Some of my students who are really into it want to be clear on what to write. “Kids are finding the level of detail overwhelming to read. Can this be reshaped so that there are no more than 2-3 big ideas available on a screen?”

The resultant design impacts on the scaffold were a change in format and content that provided a less text-heavy content and relying on hyper-linking of text to bridge across scaffolds. As a result, a section that originally contained a text-heavy blend of all key requirements of a Wikispaces personal portfolio page, with SPECS standards borrowed from the corresponding Presenting Content in Online Environments scaffolded that detailed SPECS formats shifted from their in-text usage on January 10 to being a series of smaller properly white-spaced mini-pages, all accessible as links from this main scaffold.

A similar change was documented in the alterations of the oral history best practices that were part of this scaffold area. Originally, students had the content of discipline best practices in a paper format given out within the VOR Assignment sheet distribution. This scaffold was set to debut on the website in its identical to paper format. Based on teacher feedback from MM, this content was re-parsed into a lead page with a highlighting the checklist of the concrete steps for students to take in organizing the oral history session, and with hyperlinks at the bottom of the page to the two national university sponsored oral history projects from which the researcher had selected discipline-standard best practices.

Both sub-sections of this scaffolded benefitted in their *1.5 iteration* from the initial end-user feedback about their structure and the practices they highlighted. Although the teacher and

student input about their willingness to commit the time and the number of programs the site guides them toward, the feedback inspired a design change to support students being required to demonstrate transmedia skills in presenting their text, their video, their links to their survey of literature, and their commentary on their own and classmates' work -- mixed formats and media content within a single knowledge management platform. As described above in the section on the hard scaffold VOR Assignment sheet, once these two sections were linked digitally, one of the participant teachers demonstrated a comfort in using the Wikispaces tool to edit an assigned number of required comment responses.

Soft scaffold: Sharing your research digitally. “At the heart of this curriculum is the need to share original video content. This scaffold is meant to support students and their teachers in understanding the concrete steps to share and display their interview work” (B. Schneider, personal communication, Nov 14, 2014) indicated the original design statement. This scaffold originally consisted of a basic *Downloading Your Video* segment shot in an informal conversational YouTube style. It was meant to be sent directly to students via email. It also included an *Upload your 3-5 Mini-Interview* page with a basic set of directions regarding sending of large files. The original uploading page attempted a fully embedded video on downloading and some basic link information regarding a Dropbox folder share. In this sense, the scaffold was designed to anchor and support teachers through the technological elements of the tasks students were being asked to complete.

During each of the early face-to-face sessions in December, both MM and RR voiced concerns with the technological uploading tasks. MM (personal communication, December, 12, 2015) joked, “We don’t have fancy iPad labs set up here,” a comment repeated at multiple face-to-face sessions afterward. Immediately preceding the start of the on-site class observation

RR said (personal communication, January 8, 2015) of sharing the video files, “I don’t know how to do this and I’m not sure how to explain it to the students.” During a brief conversation with MM (personal communication, January 8, 2015), he expressed his belief that, “the students aren’t going to do this project if they have a really hard time submitting their files.”

The ongoing nature of these technological concerns from the teachers suggested that it was an area of great that linked to an expressed sense that lack of clarity in technical tasks might lead to a social-emotional shut-down to the assignment. These concerns impacted two major design changes between January 8th and 14th. The first, was a decision to move away from a Dropbox based platform, as teacher feedback and the observed student statements during the class visit, indicated a pressing social-emotional concern that sign-ups for new services be more limited. As many students had indicated on initial digital surveys that they owned a Gmail address, the Google Drive platform was modeled both for its easy accessibility while signed into email and due to the cost-effective nature of renting large amounts of file space. The other change involved a version 1.5 roll out of the scaffolds with vast expansion of detail, inspired by the teachers’ repeated concerns at the January 8th session.

In the resultant final first iteration form, the scaffold expanded to include two more threshed out and distinct hyperlinked documents within the Wikispaces environment and linked onto the project support home page. These documents were *Upload your 3-5 Mini-Interviews* which was published first and *Share Your Large Video Files from Google Drive into Wikispaces* which was published second.

The first document *Upload your 3-5 Mini-Interviews* file grew into a series of screen-by-screen images to both detail and demonstrate how Google Drive can be used to share memory intensive files and to suggest a hierarchical structure for organizing said files. In nine steps and

twice as many screen images, the page walks you through a successfully completed file upload in which, “9. You have now successfully shared the file with your teachers and classmates. Repeat this step for any other interview videos you need to upload into this folder” (B. Schneider, 2015a, January 10, 2015, “Upload your 3-5 Mini-Interviews”).

As part of the expansion of this page, the original Downloading Your Video was hyperlinked at the top of this page with a Wikispaces command to open a new window. The resultant link effect to directly display of the video in new window found an effective skunk-work to avoid the Wikispace challenge of directly embedding the video into the page. Text next to the link on the page direct students “then click on the following video accessed from my google drive folder” (B. Schneider, 2015a, January 10, 2015, “Upload your 3-5 Mini-Interviews”). This design change was done strategically, to respond to the MM’s concerns and help both teachers and students see that sharing a video for the whole class’ eyes can be accomplished with a technique detailed in the remaining section of the scaffold.

The second document *Share Your Large Video Files from Google Drive into Wikispaces*, was added on January 14, provided students with a breakdown of seven steps and eight screen images. The steps listed on the page took them through the intricacies of making a publically *shareable* link through Google Drive that can be embedded in other applications for web-based viewing.

Just like the first soft scaffold described above, this scaffold experienced an initial change during the first iteration roll out. The depth of initial changes focused around adding step-specific transparency to the acts of uploading and sharing the digital files.

Soft scaffold: presenting interactive content in online social environments. The third scaffold designed for the curriculum includes elements on making a class page and individual

pages in Wikispaces, developing a robust context section, and engaging in the peer-driven act of leaving and responding to comments. According to the original design statement, the scaffold's goal was, "getting students pro-active in the process of defining their own online space and presence through their own comments and others' provocative questions regarding their displayed work" (B. Schneider, personal communication, Nov 14, 2014). On a purely technical level, the content elements of this scaffold provided a type of template or vision statement, i.e. the expected visual look and the *sound* or writing voice the material should possess.

Portions of this scaffold experienced more singular design changes than other scaffolds, generally resulting in a one fell swoop change and relied more heavily on the initial versions or pre-existing documents within the curriculum. The scaffold originally consisted of *Own Page*, and *Context*. The latter was changed in title and content to *Offering the Context of Your Interview Using SPECS*. After initial teacher concerns were expressed via phone conversations on Jan 10th to clarify final expectations regarding the analysis elements of commenting, a third newer portion to the scaffold was created in the form of *Commenting on Each Others' Work*, which provided a step-by-step process for commenting in Wikispaces.

The initial *Own Page*, portion that debuted on January 10th was released live contemporaneously with a number of files described above. Its presence was directly connected to the third task that appeared on the *Project Steps for Working on Your Digital Portfolio* portion of the first soft scaffold. Students were directed to go into the common class page and edit it with their name as an active hyperlink to a personal created new page of their own digital files and commentary. The initial page design focused on 10-12 steps that provided screen images and directions for editing, creating pages, and hyper-linking.

According to the researcher's field notes for that date, "Despite the fact that it would be easier to just list all the students' names and link them to blank pages which students could edit, I have been inspired by teachers' fears about low student participation to make the students complete this crafting of their own details to show they actually are invested in the project" (B. Schneider, personal communication, January 10, 2015). The resultant appearance of 54 edits on the Wikispaces history class page by a wide range of the student participants offered demonstrated practice impact of the design choices on the end user.

During a phone conversation MM (personal communication, January 10, 2015) indicated "Is there any way these links can open new windows? I think kids are going to get lost if they have to keep hitting the back key on their browsers." During that conversation, MM (personal communication, January 10, 2015) also questioned "Are kids going to be able to find their way around the site and not get lost about how to get back to the directions?" The research design response was to add navigability in through the use of *new window* targets in the hyperlinks and through hyperlinks that specifically directed back to main pages. "More steps are needed, I think, based on these concerns-- steps that engage students in some navigation work too" (B. Schneider, personal communication, January 10, 2015). As a result, the directions on *Own Page* expanded to a total of sixteen steps that made use of twenty-five images. In this slightly more increased depth, students were given explicit navigational goals that asked them to reflect on navigability by seeing value in linking individual pages back to a communal page.

The second element of this scaffold *Context* held an original form that detailed a request to provide background information on the circumstances and resources behind the issue. During face-to-face meeting it had been said, "I think students are going to find it too abstract to locate and describe all of that background" (MM, personal communication, January 8, 2015). Within

the context of field notes on the conversation, the researcher indicated, “A design change was made to simplify and clarify the intent to a social studies lens promoted at a number of schools with the mnemonic SPECS” (B. Schneider, personal communication, January 10, 2015). The more explicit *Offering the Context of Your Interview Using SPECS* was reproduced from participant teacher MM’s well-written summary of our January 8 face-to-face, delivered to the researcher on January 9th in the form of a student-facing email to clarify what had been detailed during class. The finalized page served as a template that offered a breakdown of key questions that might be asked in using the social, political, economic, cultural, and spatial/geographic or SPECS elements as a lens. It encouraged that they write 3 to 4 paragraphs of background i through this guiding perspective. The final edits added that this analysis should follow a collection of hyperlinks to their primary and secondary source materials.

The final element of this scaffold on *Commenting*, was added on January 11th. As the student work was not scheduled until early January to be done via Prezi, the original plan commenting was different. The phone and email conversations on the 10th regarding the depth and breadth of commenting expectations made it clear that students needed concrete support. “Is there an easy way for them to leave their comments and respond to each other?” (RR, personal communication, January 8, 2015). The researcher had also been asked, “How can we get them through doing this in so short a time if they’ve never left comments before?” (MM, personal communication, January 8, 2015).

A design decision was made to generate a step-by-step model in response to teacher concerns, with the design statement of, “In an effort to conform to a quick timeline with students who may have never done this before, my goal was to show that commenting and following-up on people’s responses can flow quick and easy” (B. Schneider, personal communication,

November 14, 2014). The resultant product offered five steps and utilized seven screen images. The steps provided details on placing comments and using the monitoring function within the platform.

At the top of the page, the document provided students directions, “Remember, we are not using our power to edit each other’s pages by just going in an (sic) writing over their work. Our goal is to ask them thoughtful, provocative questions that help them assess their own work” (B. Schneider, 2015a, Jan 10, “Commenting”) This comment indicated some link to aspects of the online environment offered in the final soft scaffold.

Soft scaffold: offering online analysis of researched work. This fourth soft scaffold was designed as comprised of two parts, *Analyzing Your Sources* and *Standards for Commenting*. However well intended the design vision behind offering a great variety of prompts for students to learn the arts of document analysis, this scaffold element experienced massive changes from intended design to iteration one roll out and version 1.5.

According to the design statement of this scaffold, “This scaffold aims to provide students a conceptual understanding of what quality analysis would look like-- both in their reflecting critically on their own work through an analysis of their sources and their commenting on their peer’s work to reflect on similar intellectual concerns” (B. Schneider, personal communication, November 14, 2014). This initial vision involved bringing students into contact with hyperlinks on document and source analysis from the National Archives, Wikihow.com, Linda Shoppe’s “Making Sense of Oral History” from History Matters, and from “The Process of Historical Investigation” a University of California at Davis’ History Project document relevant to post research and source analysis.

In an effort to respond to initial requests from the teachers, the researcher added the equivalent of multiple handouts into the first iteration version gained much content from its sources-- developing the UC Davis work into a giant table with three distinct sections-- one on analyzing individual sources, one on analyzing multiple sources, and one on analyzing oral history interview sources. Each section had multiple items or parts- and many bulleted questions. The individual source section had sixteen bulleted items, the multiple source section had sixteen, and the video analysis had thirty-eight bullets. In the effort to add specificity, the content grew exponentially.

In an email that followed the sharing of this first iteration with the teachers, MM (personal communication, January 10, 2015) indicated in an email “I have too much course content to do with them to add any other elements like this. They should of course evaluate the reliability of their interviewees, but not all sources of background info.” The researcher engaged the teacher via email and phone about the value of a summarized eight prompt model. According to field notes, “A design change was made despite the challenge of having just growed the details greatly. To respond to intense concerns about students’ capacity to internalize this collegiate set of detailed options, my review of the items suggested that they could be grouped into about eight meta-categories to support students’ dissection of the interviewee content” (B. Schneider, personal communication, January 10, 2015).

Version 1.5 of this scaffold experienced the most radical changes of any scaffold within an iteration-- adapted at first down to a set of eight prompts and then down to two. Adapting the question prompts used within the UC Davis document on historical investigation, the researcher emerged *An 8 Question Guide to Analyzing Your Sources*. This version identified 8 analysis tasks drawn from the document-- corroboration; dissonance; subject bias; interviewer bias;

historical explanation; challenging that explanation; counterargument, recommendations for further investigation. In this version, each analysis task had a single question prompt to guide writing.

In a follow up phone conversation, MM (personal communication, January 12, 2015) asked, “Can’t it just be two or three questions?” As RR also expressed concerns about students being ready to process their reflections and analysis during a time of many course projects and exams.

The very final form of this section became a two-question guide to analyzing sources with a very directive statement that students requested students reply to both questions in full-paragraph format on their Personal Wiki Page under a section called *Reflection on Your Sources*. The two questions, summarized provided prompt questions on only two of the above elements *corroboration* and *counterargument*. These elements were identified in teacher-researcher conversation as key to the rubric content. The final version of the page did retain links at the bottom of the page to the wiki-how and National Archives websites for analyzing or working with document inquiry.

The second set of materials contained in this scaffold focused on commenting. In its original form on January 11th, the *Standards for Commenting* page included headings *How can people give thoughtful feedback on each other’s writing and social media content*, *A Model to Evaluate Your Own Writing & Content*, and *A Model to (sic) Academically Commenting on Each Other’s Writing & Content*.

Each of these sections was developed for the first iteration as per a design statement goal of, “This scaffold is meant to create a conceptual scaffolding around the hows and whys into two of the scaffolds was made-- to clarify the method, the need, and the strategy for accomplishing

these goals around a quick timeline” (B. Schneider, personal communication, November 14, 2014). The original version of this page focused heavily on the use of three items assigned to each of the above mentioned sections-- a link to Common Craft’s “Scoopville” YouTube video that highlighted the ways in which information gleaned from social media commentary could shape product development; excerpts from Will Richardson’s 2010 Spectrum of Blogging which offered a rudimentary numerical coding for depth of response; and a description of the value to provide academic content through platform specific tools.

In an email, MM (personal communication, January 10, 2015) expressed, “I think that the scaffold on Effective Commenting on Social Media will be very important for them to have--I was thinking they were going to need some standards for that. It is really like dragging them over the finish line at this point in the year for me.” The resultant design change noted in field notes was, “I wanted to add explanations to make sure that students understood the importance and attention being given to the commenting” (B. Schneider, personal communication, January 10, 2015). Between its original form and the version rolled out several big changes were made which added a lot of content.

The switch from Prezi to Wikispaces altered the sub-section on modeling academic commenting to be an explanation of following the commenting/monitoring process in Wikispaces. The other resultant change, was the addition of two new elements to this exemplar for commenting including a sub-heading on, *What are we expecting from you?* that detailed a process of using the monitoring to achieve the following stated goal:

it should be in the 5-10 range to reflect that a healthy dialogue has been going on regarding the work. Over this period of 2 days, we expect that you can offer that amount of re-reading their posts and commenting--- you Tweet and Facebook like this all the time. (B. Schneider, 2015a, January 10, “Effective Commenting on Social Media”)

In addition, a second sub-head was placed in this model area to detail, “Need a Reminder- What is Constructive Criticism?(sic) vs What is Tearing Work Down?” This area included a screen image of a model for providing a critical comment on missing material framed in a positive way and offered brief quotation and summary of a Clifford Lazarus article in *Psychology Today* offering reasoning and technique for constructive non-combative statements.

Teacher MM had an intense response via email (personal communication, January 11, 2015) indicating, “I think this will overwhelm them. I will offer more specifics later but I am NOT ready to send this out as it is here. Follow up discussion via phone, text, email established a theme-- simplify vastly to ensure students’ social/emotional well-being to ensure they complete project tasks without shutting down. “There’s too much to get through. I don’t think students are going to read all that,” expressed teacher RR (personal communication, January 11, 2015). Initial emails and phone conversations brought the 5-10 back and forth commenting responses down to three comments made on two other students’ pages after having watched their materials (B. Schneider, personal communication, January 11, 2015).

The concerns were about readability and quantity of tasks. The version 1.5 of this section took on a much more simplified form structured around only two sections-- *How can people give thoughtful feedback on each others’ writing and social media content?* and a *Model for Academic Commenting...What are We expecting from you?*. The thoughtful feedback section boiled down to two very basic premises. The first was a re-statement of the SPECS and analysis content that other portions of the site indicated must be on their own page. The second was a breakdown that each student was to respond to one other student’s work, replying with posts to two other students’ videos offering three actionable comments.

The model for commenting section was also severely attenuated to include only two elements-- a screen image example of encouraging feedback that offers thoughtful questions and a repurposing of the “Scoopville” content under the line, “If you need further explanation on why to taking commentary posts seriously” (B. Schneider, 2015a, “Effective Commenting on Social Media).

The largest trend with these changes made to both parts of this scaffold was a process of simplification that dropped exposition and the inquiry methods detailed content. It is not possible in this context to determine whether the first iteration materials would been concerning to all sites or presented a site-specific concern as to an excess of procedural detail for inquiry activities. The impact of the intense feedback on the design was to eschew the level of detailed option to a more simplified task list. The shift was from process-oriented steps that require time to extremely simple procedural methods through which students were likely to develop product that might be perceived as supporting their completion of task.

Refining Scaffolds for Iteration Two

Reviewing the assessments of student work to inform the changes. In mid-January, students had submitted a range of work via the assigned combination of uploaded Google Drive files and written hyper-linked Wikispaces material with commentary. Teachers’ assessment of students’ capacity to meet project requirements was utilized as the main data collection/data source to support teachers’ confirmatory trend comments regarding the fit between scaffold and task.

The two participant teachers reviewed the student materials with the intent to utilize the Voices of Representation Student Work Assessment Rubric (VOR-SWAR) directly in their grading of the pages. Instead of completing the rubric process physically and turning over these written charts, they conveyed a time crunch and requested a face-to-face visit where they could

showcase content and share their *holistic grading* using the *mastery standards* column rather than evaluating the work as on an *Incomplete* to *Honors* continuum which also appeared on the rubric. They also felt this was apt and encouraging to students to reflect their performance completion of new skill-sets.

As a result, the product of aggregate information shared with the researcher by the teachers took on the form of a verbalized feedback from a face-to-face presentation session and several clarifying phone calls post-meeting. As they did not have physical cover sheets to reflect student trends beyond their grading, they had my *chart review* focus on scanning through page content artifacts as they commented on their assessment of the page, rather than cover sheets of grades.

The main premise given the approach that teachers used for grading was that a review of student Portfolio content uploaded to the site provided the teachers' best evidence-based grounding to reflect on the scaffolds' connection to student participation. Teachers highlighted a series of findings for me that reflected students' areas of demonstrated success with the products on which scaffolds focused.

Twenty out of forty-one students completed the first task by properly linking their own *Mini-Interview Pages* to the class page and embedding video or audio files downloaded from their phones. Two additional students set up their pages with a written breakdown of their work but no use of hyper-linking to embed the video files they uploaded to the Google Drive. Two more students created their individual pages but did not complete the task. Teacher reports on the seventeen students who did not complete task one on time indicated that these students were all severely behind on the course and other graduation requirements in their other subjects.

Several additional students who had not created their own portfolio page had engaged in the commenting on other people's work.

Only a few students utilized hyper-linking to reflect their secondary sources-- although these students tended to add richer reflection on these sources or develop ideas about them in their writing.

Commenting from peers occurred on at least half of the posted pages. Comments from peers tended to focus on items of interest they heard in the shared interview files, with a personalized reflection on how it impacted their own thinking.

Very few students followed the given format precisely, although a number of students embedded the guiding questions in a more free-form appearing single large paragraph. Most students offered an analysis of their sources. Teachers evaluated that students who followed the guiding questions on Analyzing Sources had "short and sweet" answers according to MM and that according to RR, "captured a pretty accurate and thoughtful reflection on what their subjects said" (MM & RR, personal communication, January 15, 2015). Students' inclusion of SPECS was most variable-- with many not including this as a breakout section or within their reflection.

The teachers' presentation data and a visual review of the pages, indicated that in aggregate, students fared best with demonstrating new media literacies of Collective Intelligence, Transmedia Navigation, and Networking (Jenkins, 2009) labeled "MacArthur WP/Jenkins" A, B, and C. Teachers cited a range of commenting and work sharing elements that most strongly demonstrated Collective Intelligence and Transmedia Navigation in their eyes. They cited the example of two students who had *any* self-described glitches with their file embedding, instead making reference and linkage directly to the shared folders for the files and

their peers commenting on the video/audio showing that they navigated off the page and back without complication.

Teachers assessed that student completion of the Networking standard had been generally very successful in most dimensions except utilizing feedback from peers. In analyzing the combination of posted interviews and peers' comments on them-- the teachers indicated they saw vast evidence of wide ranging increased civic participation and sharing of work for feedback. Most students had selected original topics from the major historical events-- with often no more than two doing the same topic. Teachers expressed surprise at the extension beyond the basic suggested topics. In addition to several students 9/11 and Hurricane Sandy and President Obama suggestions, students turned in a number of topics including: the Dove "real women" beauty campaign; the Canadian school female student shootings; the Occupy Wall Street protests; police brutality contrasting Rodney King and Eric Garner; the OJ Simpson Trial; the Boston Marathon; and Chechnya violence. The teachers reflected that the myriad topics showcased students' comfort in utilizing the digital tools for research and reflecting on a wider range of topics than had been taught in the school. MM indicated that he was, "surprised that student comments were so thoughtful," which RR shared with the perception that, "Students who posted seemed to be authentically reflecting on each other's interviews" (MM & RR, personal communication, January 15, 2015). Within this rubric standard, teachers did not find any evidence of students using these comments to alter or enhance their portfolio, although RR (personal communication, January 15, 2015) indicated he felt, "There really was no step built in for them to do that."

School staff offered further evidence of the increased civic participation spoken about in these three dimensions when the researcher was pulled aside during an on-site visit to meet with the teachers for the grading reflection. The following are excerpted comments shared by two

central faculty members not directly involved in the project. One educator who worked with literature courses, indicated:

It was so great to have kids walking around the school asking teachers, parents, and people outside about modern history. The students who interviewed me were so sensitive to me and asked politely if it was too sensitive to talk about. I know they were asking P and J about events like 9/11 and everybody had the same experience. We were excited to talk to the students and they seemed to really care...It was incredible watching them discover the basics of what it means to do historian work.

Another faculty member working in administration at the school indicated:

I'm hearing really good things about the project around the school community. Some of the students even came to interview me and M (also in administration). The coolest thing was getting to watch some students like MM who interviewed me and other people about 9/11 and really felt like she was doing collegiate scholarly work investigating a topic she selected and that really had meaning for her.

These reflections from school faculty suggest that the project engendered increased communal discussion and outreach in the multiple phases of locating potential resources, utilizing them as interview subjects, and following-up with them post-interview.

Teachers' aggregate reflections on the seven Common Core State Standards rubric categories found more that the student product had been more uneven. The teachers' presentation of charts indicated their assessment that according to the rubric, students showed the most strength with Technology to Dynamically Publish, Sustained Research, and Comparing/Contrasting Sources which were labeled as standards A,C, and F on the rubric.

Within the area of A, the teachers found it evidentiary in the student interviews and dialogic conversations sustained a demonstrate that each student had come up with an area of inquiry or a research question which prompted them to located and vet specific interview subjects. Although the teachers felt that students presented great specificity in this area, they also felt that there was a lack of explicit stressing of the research question in a way that makes the viewer sure what students original investigatory hypothesis or connection to the content.

“None of them stated it as a research question even though it was there in the interviews,” observed RR (personal communication, January 15, 2015).

The evidence teachers showcased during the chart review also showcased that all students who had completed the task included oral history content as the basis of their investigation alongside basic research that met one dimension of comparing and contrasting sources. As per the rubric standard of demonstrate a basic discernment in the ways in which their sources talked about the topic and what the sources agreed about, students uniformly demonstrated the ability to summarize in generalized ways to capture the gist. The teachers evaluated student work as uneven applying Webb’s Depth of Knowledge wheel, with some students going to the depth of knowledge of summary and others extending to inference or idea synthesis.

However, applying Will Richardson’s 2010 Spectrum of Blogging that was cited in the students’ commenting standards-- few students sat at a 1-3. Many students met the transitional 4-5 standard as they deepened a description of their work and others. A decent number of students extended their postings and commentary to a 6-8 level depth, offering comments that provided a form of source analysis and building on previously stated material. Students did not achieve a level of consistency with this.

Teachers felt that the finalized 1.5 analyzing scaffolds questions that modeled how to analyze sources in a simple way were evidenced in a number of students’ works even though adherence to the physical formatting was inconsistent- e.g. students generally did not label the questions as two distinct reflections often merging them into an unlabeled prose paragraph.

The assessment of student work also showcased evidence of scaffold category F, the skill to use Technology to Dynamically Publish social studies research, content, and writing. Beyond the students who posted all required content, there were even more students who evidenced

signing into the knowledge management platform and posting comments or setting up the shell of a page. In addition, students were able to make connection/hyperlinks between the Google Drive and knowledge management Wikispaces to share large files. Student posting demonstrated students' capacity to use commenting Wiki features with which teachers had previously reported no students being familiar.

Although not all students' work captured the same level of detail, the mastery standard in this category focused on students capturing their central themes. Their shared interview content, readily accessible to hear and/or see on most student interview pages provided a very direct sharing of big ideas, which were anchored by brief writing and commenting. The largest evidence lacking in this area was any demonstration of a student's *running record*. As a result, the pages lacked a sense of process point details-- pivotal points in the investigation process needed to fully meet this standard.

Aggregate findings from the sharing of work and teacher assessment were that students struggled more to demonstrate *Discipline Appropriate Claims/Forms, Analyzing Socio-Political elements*, and digitally presenting *Informative/Explanatory Texts with Formatting*.

In assessing rubric row D, the teachers presented evidence to suggest that students showed only basic coverage of the discipline-specific claims. "All the portfolios had big themes and most had a simple argument or statements of the event's impact using their findings," stated RR. MM did not feel that students "made much use of graphics or formatting even though they had easy access to images and online materials" (MM & RR, personal communication, January 15, 2015). Success was most present in the almost uniform use of video or sound files to support or back up the basic claims made on their page.

The assessment of students' context citations found they provided generally weak and uneven documentation to demonstrate standard CCSS B- Analyzing Socio-Political. Many students' content page did not contain a section that broke down SPECS or applied a clear set of social studies vocabulary. Teacher RR (personal communication, January 15, 2015) inquired, "Can students have examples of what these actually look like when they're written on a page?" Teacher MM's previously cited communications had also driven this home as a recurring theme of the project, the need for simple exemplars.

Student work showed evidence of their efforts to meet CCSS Standard G- Gathering Authoritative Sources without Plagiarizing. The breadth of their conducting of three interviews and their writing, and/or posting content to two systems demonstrated a gathering and use of authoritative sources. Students most demonstrated this standard through the selection of a variety of classmate, parent, and faculty sources for this first go-- without an over-reliance on the same interviewees. However, these student work pages offered almost no details of their process- the running record issue also present in another standard. Teacher and research conclusion was that increased inclusion of specific research stage decisions, findings, or linked files would have offered a demonstration of this standard.

Among the least evidenced in the student work and teachers' assessment was CCSS standard E- Informative/Explanatory Texts with Formatting. Only the most basic aspect of this standard was performed, with students having generated an informative text page with the basic evidence of their research. This data best showcased the primary source interviews, but was absent of cohesive demonstration of a clear formatting that was procedural. In addition, none of the student choices showed their participation in sharing annotated or grabbed charts, images, or excerpts from their research materials.

Based on these findings, two key premises were in place as a departure point for generating scaffold changes to roll out the second iteration of the scaffolds. The first central premise, was that the tweaking of scaffolds that occurred to produce the final 1.5 versions were seen by teachers and used by students as jumping off point for meeting a number of project requirements solidly-- 6 of the 10. In the four areas which students required the most additional support for improvement-- there had been more previously detailed flux in the scaffold development. When considering teachers' final approvals of the 1.5 scaffolds to the areas of student deficit, the research finding was that "simplified but procedural conceptual scaffolds" were needed early (B. Schneider, personal communication, January 15, 2015). This caused as design change that almost completely removed the inclusion of extra resources as anything other than hyperlinks-- instead favoring bulleted lists and brief phrases to create an intellectual checklist for conducting interview steps or analyzing the source materials and historical implications.

The second major premise which dominated the design changes made in iteration two, were the two common themes in the four areas in which students had the weakest performance. First, students generally lacked a consistent formatting. The researcher interpreted teachers' detailing of what was lacking as an imperative to offer clear procedural steps and literal exemplar entries to show students an easy to understand example for each required piece of writing.

The second theme in the areas of performance deficit was the lack of a process-oriented or running record. Almost no student work showcased students' reflections on their own research process and many forgot to include the hyperlinks of secondary background research even though their primary source interview questions generally showcased a thoughtful

preparation of questions. To this end, the research made a design change that presented the entire reflection process of SPECS, Analyzing Sources, and Commenting as a more cohesive procedural and outlined set of tasks both within the main VOR-SWAR assignment and the enhanced scaffold with their additional sub-pieces.

To achieve this goal, a series of concrete document *additions* were made by depositing these document pages onto the Wikispaces site seamlessly integrated as hyperlinked from the VOR Assignment Hard Scaffold. The analysis of the first iteration scaffolds provided earlier pointed out the need for materials that support students' very direct sense of both procedure and process. To that end, the newer scaffolds made increased use of bulleted and outline formatted lists, as the researcher's focus was to create enhanced conceptual scaffolding to support students' understanding that the process should contain a more elaborated running record of the research that speaks to the breadth of findings and researcher observations-- not just the oral history interview. In that way, the new *splash page* or home page for the site in iteration two had only 19 lines of main directive text- 3 to introduce the topic, a 6-item set of conceptual process points such as pre-researching the issue with SPECS context and Analyzing Sources, and a 10 item *checklist* of the steps to complete a properly organized well rounded assignment. Two phrases were at the bottom of the page offering a link for interview question planning and a link offer a precise timeline planning page for those who feel like they need that specific guidance.

A quintessential benefit of the scaffolds being hosted to the students in a web-based knowledge management platform like Wikispaces is that the older and newer scaffold content could co-exist and be easily linked. As the new scaffolds were placed as the home page for the site on January 21st, the first iteration scaffold content remained accessible from a link at the top

of the new homepage offering it to link them to the materials used to complete their first assignment. The confidence that these materials remained, also served another function.

The coexistence of the files supported the design-based process by not requiring a remaking of the wheel to create a physical handout that required cutting and pasting of old and new materials together. Students were able to use the original materials to learn the basics of uploading or downloading or commenting-- whether because they were late to the game in completing only the second task or because they struggled the first time.

For several of the scaffold sub-pages, the findings suggested no need to make revisions-- e.g. students' hosting of their files did not seem to require additional information. The vast majority of students in the class engaged with the online process, for example, several students who did not complete their assignment and host their work had still folders and pages set up in either the Google Drive or Wikispaces.

Although a review of work indicated that students in round one tended to record audio files rather than video files, feedback from the teacher participants suggest that this was more tied to teacher or student fears rather than technical issues challenges. RR indicated "I didn't know what to say when students were worried about whether the video could fit on their phone," while MM conveyed that, "I told them it was more important to do it with a file you feel you can safely share" (MM & RR, personal communication, January 15, 2015). Although generating a further document to ease social and emotional fears might be warranted in a final product, there was no clear evidence at this point to suggest what that might cover.

Scaffolds were analyzed in a strengths-based manner that recognized areas where student performance matched rubric outcomes, with enhancements made only to portions of scaffolds that had not yielded strong performative student work as seen on the charts that follow.

Table 3.

Needs Assessment of Hard Scaffold Modifications for Iteration 2

Scaffold	Content Items	Rationale for Changes
Assignment Sheet	The Activist Interview digital assignment page	Aside from focusing on a slightly different student task, the original assignment sheet was assessed as packing in way too much content on a single screen without differentiating the most important tasks. A lack of process-oriented observations and steps in the resulting student work, also led to redesigning the page with a 6-step portfolio development process and a breakdown of 10 tasks needed to complete the project. Hyperlinks to more detailed soft-scaffold resources were placed at the bottom.
Rubric		No changes were necessary.

Table 4.

Needs Assessment of Soft Scaffold Modifications for Iteration 2

Scaffold	Content Items	Rationale for Changes
Gathering Primary Sources and secondary sources beyond the classroom	New- Need Some Help Planning Your Questions for the Interview New- Further Timeline Breakdown- (If you need our help...) New- The Google Doc Tips for a Good Oral History	There was no need to repeat oral history best practices documents as the links were still locatable and provided access to detailed information. A more succinct breakdown of key questions/operational approaches to conducting the interview was added through the new "Need Some Help Planning Your Questions..." page that was hyper-linked to the main project assignment page. To support an option for students who were interested in a concrete timeline framed to support envisioning the selection, coordination, and documentation of their hour long interview, a "Further Timeline Breakdown." An assignment sheet produced only digitally and embedded directly into a scaffold

(continued)

Scaffold	Content Items	Rationale for Changes
Presenting Content in Online Social Environments	New- Class Activist Interview Page	Two parts of this scaffold held effectively to support students' completion of requirements-- the portion on Editing Our Class Page & Developing Your Own and the Using the Comment Function pages.
	New- Putting on Your SPECS for Context	
	New-Transcribing Key Parts of the Interview	The portion on "Offering Context/SPECS" was a portion of the scaffold that had heavy changes DURING the first iteration due to a large number of diffuse questions to answer and a lack of clear strategies to apply these questions to the specific research in question. In addition to revising this section completely into a succinct format, an example of well-written SPECS context was offered.
	Our Class Page & Developing Your Own	
Offering Online Analysis of Researched Work	Using the Comment Function	A completely new page on "Transcribing Key Parts of the Interview" was added to provide students another strategy to break-down the process-oriented thought on their research.
	New- Reflecting on Your Sources for Agreement & Argument	This scaffold required multiple changes DURING the first iteration-- including a temporary reduction in the number of comments due to the perceived overwhelming amount of content on the page and multiple edits in the Analyzing your Sources page.
	New- Making Robust Comments	
		The newer pages replace the long-form version of both pages with succinct descriptions and a more explicit approach. In addition, an example of quality work was added to each.

Adjusting the hard scaffolds: VOR assignment sheet. The VOR Assignment Sheet for the second iteration was released as a digital document on January 19th with only three elements: a five sentence intro explaining the vision of the project; a list of the *Wikispaces Personal Web Page* portfolio content students needed to include with clarifying descriptive phrases labeled a-f; and a *Checklist of Things to Complete for the Activist Interview Project* with 10 imperative verb

actions required and a descriptive page about each. As such it was placed as the home page to the site-- anchoring even more centrally as the built pedagogy for the project.

The first iteration assignment sheet was distributed as a paper copy, and led with one page of narrative description of the projects' goals, one page of timeline of 12-15 steps broken up by a series of dates, and one page of nineteen *before, during, and after* interview steps. The original assignment sheet continued with the oral history release form and a copy of the soft scaffold materials on oral history best practices.

In the second iteration, the form walks them through the need to start with a SPECS context write up, then an interview upload, then a transcription of key quotables, then an analysis of sources, then 10 total back and forth comments, and the face-to-face culminating exhibition. By front-loading these as the six things your personal portfolio page will include, students are provided a literal rubric as to what sections must be present on the page and in what order. This also addresses the previously identified issue of process. This format eschews the vast timeline of the steps and the micro-tasks, instead trusting that students who need a temporal break down can click on the bottom of the page to the *Further Timeline Breakdown (if you need help to schedule envision getting all this done)*. The subtle but important change is that the steps have been ordered to reflect the procedural which maximizes what the project asks for-- context before interviewing with documenting of sources, notation of key findings, and reflections on their own and each other's assessment of the sources and findings. Students are thereby given concrete choices to work in a manner that will line up with how the project expects the work to be presented-- they have scaffolding to think about things in the order which they are expected to experience them and benefit from the inductive learning process.

Likewise, the second iteration hard scaffold replaces the nineteen very interview specific steps with ten bulleted steps that each have a bolded imperative verb urging students to pick their activist, create the class page link, call the activist, collect research, interview the activist, digitize/upload, transcribe, populate their page, make comments, and show off their work in class. Instead of the checklist approach in version one where the list was predicated on supporting the interview-- this list more directly walks students through the wider range of tasks they would need to complete to accurately perform the first six pieces of reflection. In this second iteration, the concrete scaffolding immediately follows the conceptual scaffolding. Students are given a simple framework for what they should be exploring as they do the work, and then they are provided the task procedural order that will help them there.

The VOR Assignment page also followed suite from all the scaffolds that experienced a vast simplification in the 1.5 phase. Instead of opening a dialogue with students on the values, virtues, and ideal pacing for the project to ensure on-time completion, it instead focuses students on having the clearest picture of the tasks that they must complete. “Links to scaffolds that help with timeline or questioning are readily available at the bottom of this digital document-- they are available but not assumed as central to what every student will feel they need to know” (B. Schneider, 2015a, January 10, 2015, “Assignment Page”).

Adjusting the hard scaffold: VOR-SWAR rubric. The VOR SWAR rubric was not edited or reshaped at this point in the process, as it was intended from the start to remain in the same form. Teachers had already used it to assess areas in which students likely needed more scaffolded support. The rubric remained a guideline and had a link at the bottom of the page.

Adjusting the soft scaffold: how to collect & organize primary and secondary sources beyond the classroom. As described in the introduction to the second iteration scaffold changes,

the focus shifted from expository vision statements to procedural conceptual scaffolds. In this particular scaffold, the first iteration items were filled an overage of conceptual details about high-quality work. Although it used bulleted formats at points, there were often multiple nested layers to the list.

Based on the repeated concerns that arose necessitating the 1.5 version, it seemed clear that participant teachers felt most connected to the students when they felt that the steps and vision were boiled into discrete actionable bullets.

The iteration one scaffold had incorporated oral history best practices from two different handouts in their lengthy full form providing over four pages of text without highlighting the steps that this particular project wanted students to most engage. In the first iteration this appeared at the end of the paper VOR Assignment sheet-- making that scaffold piece lengthier too. By the digital *Mini-Interview* page that comprised this soft scaffold in its 1.5 form, the link offered the combo of the seventeen item *Tips for a Good Oral History* checklist and links to the two documents from UC Berkely and The American Folklife Center.

This second iteration version of the scaffold anchors itself in the heavily simplified VOR Assignment Sheet recently described-- with its extremely limited expository introduction and limited bulleted comments directing students' chief organizing thoughts with an eye toward conceptual scaffolding. The first portion scaffolds a clear vision of what content must appear on the student's Wikispaces personal assignment page for the assignment to be considered complete and well done. Likewise, the checklist contained immediately below breaks down 10 imperatively phrased tasks that constitute a completely thorough process for project completion.

In this same vein, two hyperlinks at the bottom of this page direct students to supplementary materials that share the boiled down format of the main page. These two

hyperlinks are labeled *Need Some Help Planning Your Questions for Your Interview?* and *Further Timeline Breakdown (if you need our help to schedule envision getting all this done)*.

The interview preparation sheet eschews the full handouts of oral history-- instead leading students to a six-question outlined list that focuses students on the key tasks/challenges. The imperatively phrased verbs that serve as the heading for each of the six, stress the use of evocative questions, pre-written interviewer notes, biographical to topical shifts, use of articles and videos as reflection pieces for the interviewee, and asking clarifying questions before shifting topics. In the third item on the list introducing the strategy of shifting from personal biographical to historical topical, provides students four usable prompts that could apply to almost every interviewee. In this iteration, the oral history details are more concise and concrete.

The timeline breakdown link similarly provides students nine steps that walk students through key procedures that will assist in them having process-oriented activities to talk about. From selecting their interviewee from the class document, to pre-interviewing them and using the data to find articles and online video, students are given more direct urging to gather and capture their work with a range of sources over a period of time. The format breaks down four key dates within the two-week period that students may want to apply as their time benchmarks for completing/submitting specific work.

Adjusting the soft scaffold: Adjusting the Google doc. One of the biggest concerns raised by MM throughout the research process was conveyed by his repeated request regarding assurances that students could connect easily with interviewees immediately after the student was ready to start their project. After having assessed the first iteration work, it was clear that students were willing to go out and speak to people in their extended school circle, such as their teachers, other students' parents, their own families, and their classmates. In the first iteration of this

scaffold that was meant to help students conceptually organize their activities, there was no defined portion of the site through which students could capture their decision-making process around interview subjects.

In an original design element, students would have been asked to develop a Pinterest image board to capture key information about their interview subjects. As time came to incorporate lessons learned from iteration one, MM's comments were taken as a reason to look for the inclusion of just such a communal space where student participants could know that work was happening. As part of the scaffold redesign vision for iteration two, a stated goal by the researcher was, "Offering a communal Google Sheet where the larger pool of activists that school families know from the outside world are listed, lets students take on the role of explorers-- but with a map to all of their particular community's social capital and human resources" (B. Schneider, personal communication, January 17, 2015). This intent speaks to a sense of agency—the capacity of the student participants to see themselves as having decision-making power and as having confidence in their understanding of the big picture enough that they feel safe to take action.

During the first iteration, students could only discover the breadth of interview topics and obtain a sense of who had been interviewed after all their classmates work had been posted, which in many ways mimics a more traditional non-digital classroom. For the second iteration of this scaffold, students gained the capacity to interact with each other and their teachers around the interview subjects. Much like the other changes in this scaffold, the second iteration content responds to the data that pointed out student's pronounced lack of process-oriented writing by exposing more clearly the procedural steps.

The teacher participants engaged with this shared document quickly and took ownership. Both MM and RR placed a frantic email or call after the Google Sheet went live to ensure that they knew how to manipulate the cart and add columns to support creating a space where students could write in who they wanted to work with. The interactive nature of this access parallels the interactive posting and commenting tasks that will follow. This second iteration also further pushes the Jenkins (2009) new media literacies by providing a wider range of places in which students need to be meeting and sharing with each other and playing with product of their adult community's network and collective intelligence. As the Google doc included spaces for students to learn about their subjects and prospective topics, spaces for students to request interview access, and spaces to document final interview decisions-- all participants completing the interview assignment were engaged in collective thought work and networking.

Adjusting the soft scaffold: sharing your research digitally. In its first iteration, this scaffold provided students videos, screen images, and step-by-step directions regarding the process of uploading and downloading their interview files and linking these files into the Wikispaces pages. Students participating in the first iteration had shared their files into the Google drive spaces and successfully linked their audio or video files to their Wikispaces pages. Although more students had submitted audio files rather than video files, teachers shared that students' choice to do so was more about the comfort with the memory space available on their devices, and not about the concrete choices or skills needed in their upload of files. As a result of this assessment, this scaffold was not changed for the second iteration. Students retained access to the original materials due to the entire version one scaffolds remaining accessible through a link on the main page to the *Mini-Interview* project assignment.

Adjusting the soft scaffold: Presenting interactive content in online social environments. As described earlier in the chapter, the original intent of this scaffold was to support students in establishing their online presence through the creation of a personal page for their work, providing the know-how to post on classmates' pages, and defining what context should appear on their own page to demonstrate their research and findings. This scaffold originally was comprised of three web pages-- *Own Page*, *Using the Comment Function*, and *Offering Context of Your Interview Using SPECS*.

As described earlier, teachers' analysis of student work showcased a lack of consistency in the usage of these SPECS guidelines, similar to other guidance on sub-sections that scaffolded students' analysis of their own work. Changes for iteration two were held to the test of minimalism, a need fully established during iteration 1.5.

The first portion of the original scaffold had been the file *Own Page*, a document provided students a breakdown of how to add their name to a class page, create their own portfolio page, and hyperlink the two. This document had led students through 16 steps and made use of 25 screen capture images. Linking to the class page and establishing pages of their own, were successfully completed by all students who had completed the work steps involved in the project, and by two additional students who had provided minimal content after the due date. Based on a lack of evidence that neither additional content nor minimalist clarity was needed, there were no changes made to this scaffold. A link to the original *Own Page* was added to the new assignment page/main page as a main action list directing them to use a parallel process and make a personal page for their interview linked to the *Class Activist Interview Page*. Instead of the original assignment where students had to add their name alone, they were asked to complete a line of an inserted table, providing the name of their interview subject and their history teacher.

The original *Using the Comment Function* was a step-by-step breakdown of commenting that included both technical details and described an intent of constructive comments to help others.

The original format made use of five concrete steps and seven screen-capture images. It is also worth noting that this scaffold can only be directly accessed through a link in the *Standards for Commenting* page within the *Offering Online Analysis for Researched Work* scaffold. The analysis of students' work established that student comments/posts reflected that students had integrated the skills to perform the task. No changes were made in this sub-section of the scaffold.

The two sub-sections which represented the largest changes were the revised *Putting on Your SPECS* and the new *Transcribing Key Parts of Your Interview*. Both of these sets of changes were made to address the lack of consistency in students' presentational output by addressing the teacher-expressed concerns that examples needed to be made available.

The original SPECS page was accessible from the main page of the Mini-Interview assignment as a link labeled, "2. *Provide context by writing your SPECS Analysis following the project expectations model*" (B. Schneider, 2015a, January 10, "SPECS Analysis"). Although this format gives it a primary placement as the second task due to complete on January 15, the phrasing creates a potentially confusing linkage in which the SPECS emerge as a potentially new project expectation that differs from the descriptive expectations or the concrete expectations that had been described on other links on the page. In addition, the SPECS page indicated that students should,

REFER-- Put the link to EACH of your research sources on your wiki page. For articles, this means using the URL or your articles and ensuring that your videos are linked into the page.

THEN-- WRITE A SPECS ANALYSIS OF THE ISSUES/EVENTS YOU ARE STUDYING (B. Schneider, 2015a, January 10, "SPECS Page")

The page expands on the five dimensions that comprise SPECS- social, political, economic, cultural, and spatial/geographic. The original document had 13 questions spread out among these five dimension, including:

- What racial/ethnic/class/gender groups were especially impacted or involved in the events leading up to, during, or following this topic?
- Who were the most important political figures involved in this topic?
- What political movements or events helped lead up to this topic/event? (B. Schneider, 2015a, January 10, "SPECS Page")

As these three examples from the thirteen show, many of the questions were phrased in ways that might require extensive responses. Following the lessons learned from the 1.5 iteration, an effort was made to simplify the modeling to maximize students' likelihood to use and apply it as a standard-bearer for responses. The new version of the page reduced the content from the SPECS questions that might apply to all social studies learning, to an applied model that is more specific to community-based research.

The new version asked students to write a two to three paragraph summary detailing, *Places, Key People and events, and Power and positions*. The questions posed to clarify these three areas applied more to the histories they were hearing asking how key players spoke to the press, what they disagree over, who was in power, and over what laws or proposals they were fighting.

A completely new element was added to the page in the form of a *Sample SPECS background context to be included on your Activist Interview Personal Page*, which then proceeded to provide a three-paragraph model based on neighborhood gentrification. The

sample paragraphs modeled a way for students to summarize the researched they had done while embedding hyperlinks to the articles, broadcast television, and Youtube historical videos they had found. The final sentence of the sample demonstrated a transition that described the interview subject's link to the overarching issue. In addition to providing students a brief sample, a change was made in the content of the hyperlink which draws the user back to the home page. The phrase, "You've completed this portion of the assignment-- return to the assignment page for the next section," (B. Schneider, 2015b, January 21, "Sample SPECS background context) was placed at the bottom of the page as the home link to offer a motivational response that also carries the sensibility that this SPECS section is one of multiple process-oriented documenting steps.

To carry on that sensibility, the scaffold sub-section "Transcribing Key Parts of the Interview," was added. The first two sentences on the page clarified that there was no request for students to type out the entire interview. The page gave two very concrete steps for students to complete in order to meet the transcribing requirement:

A SUMMARY DESCRIPTION of the interview subject's autobiographical account of the activism-- that includes less than 2 paragraphs of writing-- subject bio, interview description, and topics covered," and three (3) to five (5) KEY PARAPHRASES/ QUOTABLES from the interview that you personally believe to be important indicating at what time during the interview they happened. (B. Schneider, 2015b, "Transcribing Key Parts of the Interview")

A precise example was given for each of these from an actual oral history which the page hyper-linked and cited from a California State University at Long Beach oral history site. This page ended with the same affirming ending as the revised *SPECS* page and offered students a clear and more manageable picture of what is to be expected in this section.

Adjusting the soft scaffold: Offering online analysis of researched work. This final scaffold drew its original intent as a support to assist students in critical reflection on their own

sources and research, as well as that of their peers. In the first iteration, this was done through discrete pages on *Analyzing Sources* and *Standards for Commenting*. In their original formats, as described earlier, both documents were lengthy containing many source material items that were meant to provide students a graduate-school level of content affirming the hows and whys of completing these tasks. The teacher feedback produced during the 1.5 stage stressed the feedback that even the strongest secondary students prized the specificity and simplicity, over the range of resources. These 1.5 changes brought the *Analyzing Sources* document first into an eight-question draft and then into a two-question format that focused students chiefly to assess sources for agreement or disagreement. The *Standards for Commenting* page also transformed from a wide-reaching range of documents on the value of constructive commenting in social media into a two-step statement of expectations around posting and a two-screen image example of a constructive comment.

Despite these changes, the teachers' evaluation of student work between the iterations showcased a lack of content and consistency in these areas. In addition, when held up to the rubric standards, the student work primarily showcased the new media literacies categories, rather than the Common Core State Standards expectations regarding analysis and presentation of research, sources, and thesis arguments. During the teacher presentation of their evaluation of the work, RR (personal communication, January 15, 2015) had commented, "Students didn't really have enough preparation or time to focus on the other resources besides the interview disagreed," As a result of the original pages not yielding the desired results, both were altered to address these issues using the same techniques and sensibilities present in the other iteration two scaffolds.

The iteration two page *Reflecting on Your Sources for Agreement & Argument*, had roughly the same length as its original counterpart. Despite the similar lengths, the nature of the content changed radically. First, all citations and references to others' models for analysis were dropped to conserve space. This meant the hyperlinks on the bottom of the original page providing access to detailed techniques for document analysis were dumped so as to not provide any distraction from the specific process elements which students needed to complete.

Second, the original request for a sophisticated and concise paragraph with two questions on corroboration versus counterargument was replaced by a completely different format. In this iteration, the directions provide four questions that students are directed to answer in the form of a paragraph. These questions are copied below:

- How do my sources agree?;
- Do my sources support an 'historical argument?';
- Are there things in the interview that people can say offer an 'alternative historical interpretation'?
- Do I find anything in the interview or resources that address and dismiss this alternative argument? (B. Schneider, 2015b, "Reflecting on Your Sources for Agreement and Argument").

The change made in the focus of these questions was done to better align them with the expectations on the VOR-SWAR rubric categories that addressed Common Core State Standards. These changes also focus the student to reflect more specifically on the thesis arguments and counterarguments present in the sources rather than trying to pull apart the details on which they disagree. To address RR's previously expressed concern about students'

preparation to engage in counter-arguments-- this version of the questions highlights the degree to which counter-arguments can be interpreted as offering an alternative historical explanation.

Third, the second iteration page provided a detailed exemplar that continued the hypothetical topic and research used as an example on the second iteration SPECS page. Aside from detailing how comments on their own research can be brought into a review of the sources, the example also modeled how a basic but clear argument and counterargument could function. Using a gentrification example, and points that the sources' agreement on city policies being responsible for gentrification could be challenged by an argument like creative types simply aged out and moved away. This was done to illustrate how one might extract an alternative explanation from their research process and logical thinking. Like the other second iteration pages, this one also contains a hyperlink that praises their completion of another section and directs them to use the link to complete their final task.

That final task was contained on the page *Making Robust Comments*. The second iteration page was not that different in length or its use of screen images. In the second iteration the content changed from a focus on the reasons why posting is important to clarification of the task before them and increase of expectations. The original iteration of the page had experienced a major decrease in quantity of posting as teacher feedback resulted in changes between the iteration one and 1.5 versions. Based on student work showing an amount of posting that the participating teachers found notable, a decision was made by the researcher to return the posting requirements to their original levels but to provide more concrete expectations on where students were to focus their commenting attention.

The second iteration page clarified two themes that were not present in the original-- that students needed a diversity of responses and that these responses needed to address a diversity of

students' process-oriented reflections. The first iteration placed students' requirements as commenting on the SPECS content, whereas this iteration required students to reflect on SPECS, transcript, and source analysis sections. On the new version of the page, this direction was included both in the short description of the task at the top of the page, and in an offering of three hints. The hint section suggests that students make notes to themselves while watching other students' work and offers the concept of parsing out the comments in a pre-planned assignment of one, two, or three comments toward a given section.

The second iteration pages ends with two reminders-- the first that students should not restrict their comments to a short portion of others' content and the second that students should recognize they have completed the requisite portions of this project and should prepare for exhibitions.

Post-Research Interview with Participant Teachers

Approximately five weeks after completing the research activities, on March 17, 2015 an interview session was conducted with the two teacher participants. As a data source, the interview of participant teachers was aimed at gaining some confirmatory information regarding trends or concerns. Based on the participants' limited availability after several reschedules, a single interview session was held during which each of the two participants answered all interview questions, alternated turns at who answered a question first.

The questions had been provided in printed form to the participants who were able to review them and look at their sheet while being asked the questions. The interview was recorded in its entirety as a digital voice memo via cell phone and shared into an iTunes format file. The interview questions focused on two main aspects of the participants' experience-- the ways in

which the project represented new territory for them and their students and the ways in which the scaffold tools supported the development of researcher targeted areas.

The Pedagogical and Personal Change Experience

During the March 17, 2015 post research interview, both the teacher participants expressed that their past experiences with technology in the history classroom had been more limited to using to listen to files on oral history websites, to video their neighborhood walk-throughs, and to sending kids to work with blog sites. Although teacher RR said he would, “describe myself as a general technophobe,” RR (personal communication, March 17, 2015) he felt that during the project he had “become familiar with platforms...things I had never heard of before...even though I still have a ways to go in terms of mastering them,” (March 17, 2015).

In addition to personal growth around technology, both described pedagogical growth through this project-- in seeing that students could be successfully asked to share their digital work, comment on each other’s findings, interact with scaffolds, and engage in iterative work themselves. The theme of surprise at students’ willingness to respond in robust ways to each other’s work came up during the interviews in response to multiple questions. RR had identified that this digital technique was new to him.

During the interview, RR expressed the newness of seeing how online environments can be used to capture the research and writing efforts, “I don’t think I’ve done a project like this where everyone in the class had to do a primary source interview and where almost all of the ways they’ve shared what they learned are online” (RR, personal communication, March 17, 2015).

RR found this project to enhance previous years’ versions of the project in this class-- adding in the capability for students to showcase their audio/video work with textual elements in

a forum where they could share the work during the project rather than solely to the teacher or only at a presentation event. He also cited the project as different because it was “organized with scaffolding around what they were asked to do and when they were asked to do it.” (RR, personal communication, March 17, 2015). He also commented that an iterative process that included the “mini-interview” for students to get experienced with the tasks was a new element in terms of his experiences with project design.

As the interview questions turned toward the nature of the tools provided, the teachers both expressed surprise at what they termed students’ dismissive attitude regarding working with new digital platforms for academic purposes. RR expressed his own feelings of being overwhelmed with the originally proposed five platforms-- concerned that his limited exposure to the tools led to feelings of intimidation when he needed to review pros and cons with them. He also described the feeling that “even if students didn’t know them, they had more of a feel of how they could be used better than I” (RR, personal communication, March 17, 2015). He described this as tying into his surprise at student’s immediate dismissal of the options.

On the other hand, RR expressed that it is precisely this question that has followed him through different classes and of which he remains critical. He wondered openly during the interview if anyone had found the key that opened the door to the vastness of resources and content on the web in a manner that would let them bridge students’ use of web sites and digital social media from the social to the academic.

He imagined that such know how would, “help kids make that leap where they think of it like something that’s not ‘oh no, I just do that with my friends for fun,’ or they like you know make judgements about certain sites and are like, ‘Nah, I’m not doing that!’ and that’s my world” (RR, personal communication, March 17, 2015). In evaluating this research project, MM

indicates that he thinks there were moments where “some of the kids did make use of the website and listened to more of each other’s work than if it was not online and some commented on each other’s work.” He wondered openly whether “academically safe” (MM, personal communication, March 17, 2015) Facebook spaces existed for students to engage in this kind of work.

He feels that some students may have not embraced the process because of teacher roll out and the initial number of requested online activities. However, he also expressed the feeling that Wikispaces might not have housed enough excitement figuratively and use of applets. During both pedagogical student engagement questions and technology tools questions, he shared his belief that students have become so comfortable with the embedded video functionality of sites like Youtube and Facebook, that “to have to read through the material without the flash felt onerous,” and may have lacked what he describes as the “intuitive design” (MM, personal communication, March 17, 2015) that he believes adolescents have come to expect universally.

All of RR and MM’s concerns during the March 17, 2015 interview, speak to the TPACK issues that are the focus of this research. RR’s feelings highlight several fears that often arise around alignment when teaching with technology-- the anxiety over one’s understanding of the technology itself, the questions regarding aligning the technology with the teaching strategies, and the concerns over how to appropriately modify or adjust the project. MM’s concerns highlight the alignment challenges when high school teachers are focused on inspiring students with technology. He wonders about techniques he can apply in his pedagogy to help bridge students’ biases regarding the surface qualities of different technological tool’s affordances.

The Scaffolds Strengths & Challenges

When asked about the scaffolds themselves, the teachers seemed to find great value in the technological supports they provided-- with RR feeling that initial scaffolds favored explaining the technology know how rather than the writing content and with RR and MM feeling that elements like the *help video* were completely new ideas to him about how to incorporate how to tasks and that they combined with the screen image directions were “particularly helpful” (MM & RR, personal communication, March 17, 2015) and impactful on the students. Both teachers cited this as enhancing the dimension of students’ abilities to utilize multimedia inside explanatory or instructional texts, with one stating, “We didn’t spend class time on it, so to the extent that it happened, online tools were responsible” (MM & RR, personal communication, March 17, 2015).

Both teachers found the scaffolds and digital tools helpful in supporting students through the location and use of expert sources-- in this case primary source interviews with human participants. RR felt that the inclusion of a digital shared database of potential activist interview subjects in the second iteration “helped create efficiency and confidence” (RR, personal communication, March 17, 2015). On the other hand, MM (personal communication, March 17, 2015) saw the techniques and structuring of interview skills as most enhancing the project, saying “the interviews were the strongest for me, and from what I heard on the interviews they were very engaged, and they had great conversations, and they came back very excited about that and what you gave them, some of that really rubbed off.”

Despite thinking that not all students made full use of the materials due to factors like time crunch, the teachers agreed that the laid out examples in the second iterations were very

clear, with RR stating that “if a kid read through everything, it was very laid out for them what we wanted them to do” (RR, personal communication, March 17, 2015).

Both teachers also shared a common feeling that the scaffolding was an asset in supporting students’ understanding of the social studies concepts and skills. RR said he was pleased with the samples provided to students in the scaffolds and with the students’ resulting work on these areas of their research. MM felt that the iterative process created for student participants of doing the Mini-Interviews and then the Activist Interviews offered students practice and allowed so that “we could give them feedback on if they weren’t doing enough or they misinterpreted what one of those areas were about...We were clear with them without overburdening them with some specific questions about what SPECS means” (MM, personal communication, March 17, 2015).

When asked to reflect on the extent to which the scaffolds and process supported students’ documentation of a running record of their work process, the teachers were at first both expressing concern about how explicit and front and center reference citations were presented.

Through direct comments on the confusion they felt students had with two distinct pages for each phase of the project, they suggested that a singular page per student would have better highlighted students’ research phases for both themselves and the students.

RR reflected that he believed students demonstrated more clarity in their presentation of the audio/video interview and related comments than on portraying their research on the page. As both of them examined the idea of running record, they shifted their answers toward looking at both the comments and citations on students’ pages. RR shared that, “commenting on each others’ work helped highlight their arguments” (RR, personal communication, March 17, 2015).

Their spontaneous review of one student's page gave both pause and changed the trajectory of some of their commenting on the running record that the scaffolds provided. As MM (personal communication, March 17, 2015) viewed the work of one of RR's students for the first time and stated her use of images and diverse citations was "exceptional" (March 17, 2015) and not present in all students' work. Upon further reflection, RR said, "I think that this is the interesting thing about that project, what kids really took to this and ran with it and what kids were really freaked by it" (RR, personal communication, March 17, 2015).

As RR reflected on potential advice to make the references part of the scaffold clearer through directions on annotation, he commented, "...reading the way that they spoke to each other, the ones that did do it, there's an adult serious voice." He expressed surprise that despite initial complaints about end-of-the semester assignments and early expressed disconnects, that "when they actually did it and it came to crunch them when it was due, they didn't just do BS comments..." further stating that "the interview and commenting was very authentic and felt real and not 'I'm going to take blah, blah, blah,' to get to a checkpoint," (RR, personal communication, March 17, 2015).

RR expressed several times that due to the academic and thoughtful nature of the students' comment posts, he had reconceived how digital peer-to-peer feedback might be incorporated in his social studies courses on other grades. MM expressed, "They really referred to specific things, it wasn't a bunch of bromides," noting that one girl had made 6 comments on just that person's page. "Our kids are more comfortable talking face-to-face, but it was nice seeing the ones who did comments using them well for this." (MM, personal communication, March 17, 2015).

MM reflected on the project as a *conundrum*, arguing that it supported and drew more from students while perhaps also leaving a door open for resistance or lessened accountability due to the online nature. MM (personal communication, March 17, 2015) liked that “many kids used it authentically and said more to them than they would have in person.” On the other hand, he felt that some students were overwhelmed by the various scaffolds and might have shut down from submitting anything given that he imagined they might feel that “having a blank web page is maybe different than coming to class without something to share” (March 17, 2015). His ultimate reflection on the conundrum took him back to thinking about the class time factor— “I think that with enough time, a lot of these scaffolds can be very good” (MM, personal communication, March 17, 2015).

The Scaffolds’ Challenges

The time factor came up in the interviews as a factor in areas that the teachers felt that scaffolding did not achieve its goals.

One such area was providing content aimed at mediating teachers’ and students’ technology skills fears. MM felt that teachers needed more one-on-one technology skill support in advance of turn-over to the students-- so that each teacher was capable of problem-solving technology hang-ups that students experienced. He reflected that multiple times students’ perceived snags, of “that doesn’t work changed into I guess it does” (MM, personal communication, March 17, 2015) when their concerns were directly addressed.

Although students were successful in identifying the social studies concepts, both teachers felt that the scaffolds were unable to help students develop larger research questions. RR did not feel class time was devoted to this and did not find this content present in the student work. MM cited the compacted timeline as forcing students to move from first findings to next

work, suggesting that an additional stage of the project would have helped build toward students' refinement of such a question.

Both teachers described that "there was a lot of stuff online," although they both cited limited turn-around time, teacher roll-out choices, and lack of flashy web design as road-blocks to students' full incorporation of scaffolds. Each of them stated at one point that they did not highlight certain sections of the scaffolds on the site by displaying or discussing them in class, and that this might have had influence on what students gave importance.

When asked to look at the way scaffolds support students with exhibiting their work and referencing their research, MM (personal communication, March 17, 2015) asked if "weblinks is enough" when students want sites where they don't need to open windows and can "click and scroll down" (March 17, 2015) to see embedded videos. RR asserted that he thinks that limited time in class focused on their research impacted the breadth of them clearly referring to the materials online.

Along with limited use of the range of materials, the teachers' perception was that they did not spend enough class time to help them reflect on their use of expert witnesses and materials. MM made particular note of the challenges involved in comparing and analyzing sources-- as he felt students might lack the "exact match of topics, specific facts, and interpretations" when trying to compare their primary source interview and articles across formats. As he reflected, he suggested that a contrast in recollections could be better achieved "if they'd interviewed two people about the same issues it'd seem a lot more organic to compare the two individuals' points of view" (MM, personal communication, March 17, 2015).

There was some consistent feeling expressed by both teachers that students did not internalize much about the affordances of different platforms and nuances of media tools based

on a combination of teacher roll-out and students initial dismissiveness to non “social” uses of these sites. MM recalls, “Universally, the kids were like ‘I’m not going with you,’ this was their separate thing” (MM, personal communication, March 17, 2015). The quest for a process or technique that addressed and bridged that student privacy sensibility was MM’s persistent ideal throughout the interview-- for which he was still searching.

In addition, although both teachers described a vision on how the existing shared content could be well used as a base for ongoing sets of students to do similar work, MM expressed that his next question would be how the scaffolds and process could have integrated more back and forth between the online interactions and the classroom interactions during the project’s phases.

Transition to a Final Product

After receiving the second iteration scaffolds, students completed work on their *Activist Interview* portfolios. As opposed to the original student work, with rare exceptions, the second iteration student work submissions included a richer set of SPECS background context, deeper analysis of resources, and transcribing of key ideas and statements from the interviews. In addition, pages had a range of comments from other students. Although teachers had cited only some students’ work as exceptional during interview due to inclusion of multiple images/graphics, most of the work conformed to the basic new exemplars released in the second iteration scaffolds. These intense changes in format, especially as they were not covered in class, suggested that the scaffold design changes were successful. The succinct and process oriented elements of iteration two demonstrated that they could carry into students’ conception of a properly completed project.

After the teachers' review of students' work and the post-research teacher participant interviews, the researcher made some final transitions in the curricular product to enhance its effectiveness as suggested by the user responses and reactions.

The goal in making final tweaks in the scaffolds, was to draw on observations and suggestions made in the teacher interviews to add sub-section enhancements on some of the scaffolds. Premium among the interviews was a request for more hands-on teacher technology training, more pre-planned time in the project, enhanced face-to-face peer interactions throughout the process, more student choice with social media, and more exposure to how to respond to snags. The changes below were incorporated in the premium version of the scaffolds:

Table 5.

Final Premium Version Changes to Hard Scaffolds

Scaffold	Premium Version Changes
VOR Assignment Sheet	<p>The changes in this scaffold include an alteration of the time frame that increases the number of weeks, and integration of the two phases of assignments into a singular format, and an alteration of the quantity of activist interviews-- requiring two.</p> <p>In addition, there are two new requirements being described on the assignment sheet-- one is a link to a peer feedback portion of the Presenting Content scaffold, and another that requires students to select and post in a <i>Personal Favorite</i> social media-- either Twitter, Tumblr, or a similar environment where they feel comfortable posting their work.</p>
VOR Student Work Assessment Rubric	There are no changes being made to this scaffold.

Table 6.

Final Premium Version Changes to Soft Scaffolds

Scaffold	Premium Version Changes
How to Collect & Organize Primary and Secondary Sources Beyond the Classroom	<p>The Further Timeline Breakdown document and the Google Sheets file have been altered to be more generally applicable beyond this specific project, by talking about week one/week two/etc. and to be more universal through both phases of the project.</p> <p>Also, two documents have been added. One has content on Publically accessible databases was added. The other is a set of teacher directions for Outreach for Activist Interview subjects with sample email outreach campaign ideas and techniques.</p>
Sharing Your Research Digitally	<p>The software video screen capture using Snapz software has been added to offer teachers a one-on-one walk through of the upload/download software and platforms.</p> <p>More brief Youtube style videos have been created to explicitly cover the downloading/uploading/embedding of video.</p> <p>A <i>How it Works, When it Doesn't!!!</i> document has been added to provide moral support and address FAQ for teachers and students.</p> <p style="text-align: right;">(continued)</p>
Scaffold	Premium Version Changes
Presenting Interactive Content in Online Social Environments	<p>A <i>Face-to-Face Checkpoints for Peer Feedback</i> page is being added to support students in engaging in live interactions around their work as they go, to provide themselves and teachers with multiple touchstone opportunities to reflect on the research and ensure that work is getting done at checkpoints.</p>
Offering Online Analysis of Researched Work	<p>An <i>Identifying Your Research Questions</i> page has been added to support students' ongoing formation of a research question.</p>

Hard scaffold: VORC assignment sheet. The basic format of iteration two is being carried over into the final product. One major change is the integration into a single digital page of both the Mini-Activist Assignment page that dominates the first phase of student iterative work and the Activist Interview that dominates the second phase of student work. A

downloadable/printable PDF of this page is included on the page to ensure that teachers and students can print a hard copy of the assignment at will.

Within the pages of the assignment, certain quantity elements have been changed based on recommendations arising during the teacher interviews. The overall duration of the project has been increased to 9 calendar weeks with supporting soft-scaffolds that offer timeline help having been adjusted to this duration. In addition, the number of Activist Interviews has been increased to 2 to ensure that students have two primary source interviews from which they can reflect.

The interviews with teachers have also inspired additional effort to support students' further growth in areas that teachers felt needed development. A link has been added on the assignment sheet to offer a face-to-face peer feedback element within the soft Presenting Content scaffold.

Also, to further bridge the divide addressed by MM between students' personal and academic tastes, a new portion of the assignment has been added inviting students to complete postings in their *Personal Favorite* social media to include for academic credit. Instead of requiring students to sign up for sites as part of the curriculum as originally requested, the new hyperlink on the revised Assignment Page leads students through a process of selecting their own favorite posting tool to engage in ongoing micro-posting throughout their research process -- with suggestions of students using Twitter or Tumblr-- two most requested by students during a site visit. A model of cutting and pasting these posts onto one of their portfolio pages and gives an exemplar to model their writing a final reflection on the differences between their prose work and micro-post work. This returns the original beta design project portion that engages students to develop their own sense of the affordances of different tools/mediums online.

Hard scaffold: student work assessment rubric sheet. As the teachers did not find challenges in guiding the assignments around the rubric other than allowing more time and more opportunities to conduct and reflect on research, the rubric itself is not being changed.

Soft scaffold: How to collect & organize primary and secondary sources beyond the classroom. Basic alterations have been made to structure the Further Timeline Breakdown around *Week 1* through *Week 9*, rather than specific dates, so that it can be more universally applied. Similarly the Google Sheets file that models how to collect and allow students to collaboratively work with Activist interview information has been adapted to incorporate both rounds of interviews and to be more universal.

Two new content documents have been added to support teachers more universally-- one is a Publicly Accessible Databases document to support students' access to more refined databases.

A second *For Teachers*, document provides teachers resources to support them in leading the students through the location and identification of activists-- providing a sample email outreach campaign and school-community techniques for identifying and gathering human capital.

Soft scaffold: Sharing your research digitally. During the teacher interviews and in students' work, there was much success with complying with the basics of uploading, sharing, and inserting the digital work into the portfolios. However, one area which both teacher participants spoke on at length during the post-research interviews was their need to feel trained and supported enough in the key project technology tasks that they can lead students through the minefield of technology hiccups. Three distinct content pages have been added to support teachers and students through this process.

First, a *For Teachers* page that uses demo software, in this case the Snapz program for Mac OS, which allows for video screen capture. The links on this page walk the teachers through the things they should be seeing on-screen to properly upload, download, and embed files on the platforms required in the assignment.

Second, a page has been added with more YouTube style videos that walk students through specific tasks involved in the uploading and embedding process. This supplements the original uploading video and also provides teachers an additional access point for reminding themselves of how to do these skills.

The third and final change is the addition of a *How it Works, When it Doesn't!!!* document. This document provides a sample set of technological concerns in the format of *Frequently Asked Questions*. Jumping off from the teacher comment that students were often turned around from can't do to can do by the acknowledgement that there was an available solution.

Soft scaffold: Presenting interactive content in online social environments. Many aspects of the second two iterations in this scaffold provided students with solid models and examples for developing a rich portfolio of their work. One of the teacher expressed goals for taking a project like this to the next level was a strategy for incorporating face-to-face sessions throughout the process.

The researcher found this a compelling change for two reasons. First, one teacher's comments suggested that some students may have been non-compliant with the work because they may have felt more comfortable having a blank web page than if they had to present the work in class. It was also suggested that some students might have felt overwhelmed in the

process of producing multiple elements. Second, both teachers insisted that students had gained valuable feedback through their digital peer-to-peer commenting sessions.

The addition of a *Face-to-Face Checkpoints for Peer Feedback* section within this scaffold requires students to set up face-to-face review meeting at specific stages of the process and to incorporate these sessions into a posted running record. The page offers an exemplar for that. Teachers using this product can make the decision about whether students need to have these meetings as an extracurricular homework assignment or whether they are willing to make time for the assignment in class.

Soft scaffold: offering online analysis of researched work. Changes in the second iteration scaffold on offering analysis enriched the students' analysis of their own sources and of their rich commenting. The teachers' common surprise and appreciation of the sophisticated academic nature of the comments suggests that this area does not need further adjustment. Students' analysis of their own resources, including the way they fit into the overall research, also improved in the content found in the student work.

One lacking area in this section, based on the teacher interviews, was students' challenges in establishing their research questions. Teachers had felt that students had needed more points of reflection, including their strategies moving forward in order to be able to espouse a clear sense of their research questions. A new content page on *Identifying Your Research Questions* has been added to support students through this process. This page focuses students meta-cognitively on their own process of developing a cohesive set of research questions and formulating an enduring definition to what their research examined.

The Final Product

An updated Wikispaces site has been made available on the web for all parties interested in this curriculum. The scaffolds themselves are now hosted separately from the digital content of students' work collected during these research activities. The collective content exists in the format of Wikispaces to allow it to be shared with future groups of teachers interested in using the Voices of Representation Curriculum model.

The researcher has collected the pages of the site in a digital form and is maintaining Wikispaces access to ensure that key iterative versions of the content are maintained. Excerpts from the Wikispaces site are contained in Appendix B of this document.

Chapter 5: Cultivating Civic Practices with Digital Ones

I think they stepped up and realized they were ready to do this: to interview strangers and hold their own; and use their research to feel like they were somewhat informed on what the people were talking about; that confidence and sense of accomplishment manifested itself. (MM, personal communication, March 17, 2015)

End of the Process Realizations

At the end of the research process, the teacher participant that had been most predictively critical of what students would be willing or capable to do given a turnaround of 4-6 weeks, found himself lauding the authentic work that was achieved by the students who completed the project.

Both teachers praised the quick collection of meaningful interviews, the range of thoughtful comment postings and responses, and the growing excitement students had to share and discuss their online work face-to-face. Beyond these things, MM credited the project design with reminding him that “doing oral history...it’s a really vital way of making history come alive for these kids and showing them that people are still doing these things” (MM, personal communication, March 17, 2015).

The teacher participants expressed a shared belief that the project and scaffold design had set up an environment in which their current students had successfully stored academic content, which they could foresee future classes using. In a post-research interview MM envisioned the project Wiki-site as beneficial to provide case studies for future years’ students doing this work and as a singular ongoing repository for their school’s future students to store all first-hand primary account research content. So what paved the way for success with the students?

Research Inspirations

“TPACKing” to bring history, technology, & real world problems together. This document opened with a Pierre Lévy (1997) quote that challenged the falsely implied image of a

cold cyberspace and affirmed that digital networking allows individuals to experience tangible manifestations of the abstract internet-based world within their own livelihood and personal space. The first two chapters reflected an educational world in which teachers face major disconnects around linking technological tools and social networks into the classroom. Sociological and cultural research on adolescents' use of technology to take action and seize control of public discourse or back-channel cultural change has become a noted reality (Ito, 2003; Jenkins, 2006; Jenkins et al., 2009; Purcell, et al. 2013). From elaborating fan fiction to remastering and remixing their cultural sights and sounds, teens have taken to interacting with others digitally. The findings of these researchers tend to portray a world in which teens increasingly live their lives and hone their voices online, while their schooling remains vastly traditional and ignorant of the cultural significance of teens online lives. The researchers also capture the sensibility that new media literacies have developed and can be discerned by a careful consideration of what the technology empowers teens to share.

At the same time, educational standards in the classrooms across the nation have experienced shifts motivated by Common Core State Standards (CCSS). These standards require students to demonstrate through graphics, media, and technical writing to highlight their understanding of discourse. Students are now asked to reflect on the substance of their sources and highlight arguments and counter arguments that emerge in their research (NGA, CCSSO, 2010). Although many take the new media literacies and the CCSS to be focused on different skill-sets, there are some discernable cross-over elements. The Networking, Collective Intelligence, and Transmedia Navigation literacies spoke of from MIT Media Lab's research (Jenkins et al., 2009) speak to the intersection of skills requisite for adolescents to demonstrate these CCSS in digital media. The process of teens surfing the information superhighway,

sharing their findings, and creating a narrative that bridges the media offers a way to bridge classroom and online life.

Yet, decades of failed efforts to make technology in the classroom commonplace highlight a disconnect of epic proportions-- where teachers' pedagogical training neither prepares them to fully incorporate learning technology, nor does it highlight how technology can support content knowledge. Popular technology infusion attempts tend to flatten the technology into controllable morsels that limits students' exploration-- trends like WebQuests. Other attempts to engage popular online applications or software tools sometimes backfire for teachers who are not operating with a clear sense of the affordances of the medium or platform. Many a contemporary middle or high school teacher has asked students to write out on paper, a Facebook profile for a fictional character on paper or a what if Tweet that might have come out around a decades or centuries old historical event. When it comes to classroom technology integration, the struggle is real.

It was my belief that a lens that has emerged over recent decades which provides insight into this disconnect, is the Technology, Pedagogy, and Content Knowledge (TPACK) approach. The early chapters of this research share a survey of the literature around technology infusions in the secondary classroom and select higher educational projects-- with the question of TPACK alignment emerging front and center. Some research detailed projects that had innovative use of technological tools, but did not drive the content knowledge. Other research focused on schools that hosted projects that embedded content knowledge but had little consistency across the educators who were teaching the material. Still other projects showcased strong disconnects between the technology and the other two elements-- either applying generalized technology to

content areas which it did not enhance or employing technology that did not embed a clear pedagogical vision of what students were to learn.

My own two decades of teaching were heavily influenced by the pedagogies of John Dewey, Maria Montessori, Paulo Freire, Debbie Meier, and Ted Sizer. Despite different foci, these educators prized the messy and student-driven process of inquiry and learning by doing. They favored assessments in which students demonstrated their learning through a process of sharing their findings and solving real-world challenges. Many of their priorities encapsulate well in the framework of problem-based learning, which has long demonstrated success in higher education and secondary education as an approach that prizes the development of critical thinking skills and a wider capacity for student self-correction and inductive learning.

Just as central to the work of these educators was the same social psychological sensibilities explicated by Lev Vygotsky regarding the Zone of Proximal Development. The urge to recognize what learners can achieve when scaffolded through a complex set of tasks just beyond them is a common thread of these progressive educators-- the look to the community-based aspects of a productive learning struggle. Within the literature on such learning struggles, there is also trend toward recognizing the way that educators can spearhead the collection of details on best practices and strategies to provide students best-case examples of how one might solve a challenging problem. This problem-based inquiry model has natural parallels in the process of collecting and archiving historical content.

The secondary social studies classroom stands out as needing innovative educational technology curriculum precisely because there is such a noticeable disconnect between adolescents' lives on the screen and their lives in the classroom. Students are happy to post their last innermost thoughts as a Facebook status update, yet are reticent to offer nuanced academic

research in a transparent and permanent way. In recent years, a lot of research has focused its attention on civic participation and adolescents-- attempting to define how effective they are at engaging as citizens of the world.

The split between their civic participation online and study of civics in the classroom brings the split into relief. Several research efforts have focused students to engage in governmental practices and gain a sense of the participation of politics. Fewer efforts have engaged students to search out and document history and social/cultural events themselves. Oral history collection and analysis stands as a *signature pedagogy* of the history classroom.

My research sought to examine this as a point of connection-- seeking to support teens as they tap into using the digital mediums to document their own historical and cultural research in the form of oral history interviews that extend beyond the school's doors.

As a researcher exploring this literature, these past classroom experience and action research drew me back to these themes of teens socially-presenting digital content, engaging in problem-based learning, and increasing their civic participation through social studies activities. A survey of the literature suggested how to cultivate synergy with these three elements. Problem-based learning situations had been utilized with solid effect to expose students to situations that required civic participation. Adolescents engage in posting their thoughts and experiences more as a norm than as an exception. Yet, many teachers have experienced technology-infusion classroom projects that have failed-- disconnected in their attempts to bridge the social and the learning.

Examining the intersection of these three elements as an effective strategy to achieve TPACK alignment came to ground this research. In reviewing past pedagogical practice and a survey of research in these areas, the concept of cognitive and conceptual scaffolding emerged as

a teaching practice that might hold the three elements together. Some research in this area teases out both hard and soft scaffolding-- that which builds the pedagogy through the structuring of the assignment and that which offers exemplars, best practices, and student-facing supports (Saye & Brush, 2002).

Always concerned with supporting teacher educational technology practice, this researcher chose to use design-based research as a methodology to develop and refine successful curriculum that could support secondary-level social studies teachers in bringing technology and civics together through hands-on student problem-solving and inquiry. The Voices of Representation Curriculum (VORC) provided a model through which students could be challenged to engage in what some argue to be the most basic work of historians-- documenting oral history. Instead of insisting that students cover specific content aligned to a precise moment in the scope and sequence of the secondary classroom, VORC creates a self-contained experience for students to build up their acumen to engage in civic participation beyond the classroom doors. The curriculum combines a multi-phasic interview process with the requirement to share their findings online and to engage with classmates for peer-to-peer academic commenting.

To provide a glue to hold the process together, VORC was developed to provide teachers with a model of applying both hard and soft scaffolds tailored to walk students through collecting the oral history, digitizing it, documenting it, and engaging in social feedback around their academic work. One of the goals of this content was to engage students' naturalistic inductive learning process through the scaffolds-- empowering them to ask how and why situations in the world outside them have come to be.

The theory in use and theory in practice underlying this research was that students be empowered to exercise autonomous civic participation and social studies learning through a process-oriented experience they drove by exercising student choice in their specific oral history topics. The exemplars included in the later iterations of the curriculum, support students in having a clear model of how one can capture short but sweet academic writing that is age-appropriate, but college preparatory.

A Methodology With Parallel Process

VORC was designed to meet the TPACK needs described above by employing scaffolding to ground the alignment of technology to task, and anchor students' inquiry activities with the problem-based learning so that they remain capable of doing novel and complex tasks.

A design-based methodology was employed to allow these scaffolds to be tested and refined, and held up the lens of their utility in supporting students' completion of certain quality standards in the assignment. For the purposes of the research the VORC Student Work Assessment Rubric (SWAR) was created and identified specific skill-sets and dimensions to the student work that should exist in the ideal.

The rubric presented mastery standards for 3 new media literacies of Networking, Collective Intelligence, and Transmedia Navigation and 7 Common Core State Standards related to social studies research, digital tools, evaluation of resources and arguments, and multimedia presentation. These standards sought to integrate the burgeoning digital skillsets of the participatory online culture of teens with subject-specific standards that have been ratified by most American states.

A public school location was identified as the site for research based on its general commitment to student-centered learning and innovative teaching. The two twelfth grade history

teachers agreed to participate in the project. These instructors were teaching a civil rights/social activism course that focused on late twentieth century pivotal historical moments relating to women, gays, and people of color. These teachers were interesting collaborators because they possessed a combination of two strong and contradictory feelings going in the project. Although they expressed a love of engaging student projects, they also expressed immense fear that technology glitches and time would not be on their side. Initial fears of this kept cropping up throughout the project, which had two interesting impacts. First, the skepticism provided the researcher a beneficial challenge to balance revising materials in ways that maintained sophistication while being succinct. Second, the concerns impacted their roll-out choices, as they would reflect during the post-research confirmatory interview activity.

During November 2014, members of the school community were brought more deeply into the research activities. Outreach to the school's administration and parents of the 12th grade students in these classes provided consent/assent materials and a direct route to reach the researcher to explore any questions. After participants provided consent/assent in early December, we entered a phase of linking the VORC curriculum into the classroom. Through a series of five meetings with the participant teachers, an initial beta curriculum was refined into its first iteration format.

After parents were informed and consent and assent obtained for these classes, a set of hard scaffolds was provided to students in the form of a VORC Assignment Sheet and a rubric (VORC SWAR) during late December. From December through the end of January, students engaged with the scaffolds. Students' reactions to the first iteration of scaffolds were immediately passed along from teacher participants to the researcher and had a role in radically reshaping some portions of the scaffolds into what could be called a 1.5 iterative version. The

lessons learned from this 1.5 phase along with teachers' analysis of student work submissions after the Mini-Interviews informed the scaffold revisions that were made to prepare students for their Activist Interview. Teacher participants and the researcher noted students' successful completion of the project with increasing levels of detail after viewing aggregate student work. Five weeks after the research period, a teacher interview allowed these two participants to share their overall trend experiences within the project. Final tweaks were made to the curriculum based on the last look at student work and teacher reflections.

The methodology for research focused the design-based research around two iterations of the scaffolding to refine these curricular materials. The design expectation was that the second set of scaffolds would be explicitly informed by the aggregate strengths and weaknesses present in the student work generated after the classes' use of the first set of scaffolds. Indeed, students' work inspired by the first iteration was strong in its use of hyperlinked video/audio and text and basic writing and posted comments. However, students' content fell short in areas of capturing the background context, the thesis arguments/counterarguments, and the summary of key accounts in the interviews. The second iterations had pages added into four of the six scaffolds to supplement the areas in which student projects had showcased academic weakness.

A core decision was made to parallel the timing of the students' own iterative work process to the research iterations of the scaffold. Student participants engaged in two phases of oral history interviews during the project-- the *Mini-Interviews* and the *Activist Interview*. The former was a series of three 10-minute semi-formal interviews that students were to organize around a contemporary topic of major news interest. The latter interview was an hour-long session with formal goals during which students were to engage an extended community member

from a list that staff had gathered, and bring them through a reflective review of their own social activism and the notable events in which they had participated.

The research utilized a two-phase process with students for multiple reasons. First, this researcher believes that it is a sound way to scaffold students as they engage in a level of tasks that accesses their Zone of Proximal Development. When students are given the first portion of the project with its Mini-Interviews, they find themselves deeply thrown into the process of investigating primary sources around an issue of their own choosing and engaging and then documenting these sources' recollections. Outside of the scaffolded content on the Wikispace, students were provided very little instruction in this area. Two years before they had engaged some person-on-the-street brief questioning to ask for reflections on the neighborhood. In the VORC curriculum, students are asked to start with identifying a range of 3 people they know who are not directly associated with the course and feel comfortable interviewing on a widely known contemporary historical event. The Mini-Interviews were a major jump beyond the familiar in a subspecialty of history to which few students have great acquaintance. The scaffolds walk students through a reflective process.

In the second phrase of their work, students have a markedly more complex interview, both in terms of duration and complexity. Although teachers are using the VORC outreach model to obtain prospective activist interview subjects and sharing their contact information via a Google Sheet, students must engage in a process of identifying subjects as candidates, pitching to their teacher/class that they conduct the interview, and arranging an off-site interview that they will document publically.

Although the iterative nature of the students' work allowed for the research to have natural data collection breaks, it is a meaningful permanent part of the curriculum because it

enabled teacher participants to share formative assessment with students, and provided students a valuable parallel process through which they could gain confidence as they developed their practice around historical interviewing and archiving. During their post-interviews teachers noted this increasing student confidence and engagement in process-oriented activities.

Research Lessons Learned

The Voices of Representation Curriculum presented teachers with a prospective approach to integrating student-centered inquiry in the history classroom that relied on digital technologies to support information sharing and interactivity beyond the classroom. Participant teachers approached the project with skepticism and exited it with more of a can-do belief about using digital technologies to stimulate peer-to-peer and peer-to-world interactions. Although this particular curriculum did not engender every class participant to complete their assignments, neither had the rest of those students' courses. The vast majority of students that submitted work for these assignments showcased work that on face value was influenced by the directions and formats embedded in the project scaffolds. A number of research lessons were learned from these scaffolds and the research process itself.

Hard scaffolds. As anticipated from the survey of the literature, the built pedagogy of assignment sheets impact students' capacity to successfully comply with educator's expectations. In the first iteration of the scaffolds, the Assignment Sheet hard scaffold was focused on establishing a wide range of premises and details that students should have in their heads: due dates, rationales for approaching interviews, ways to structure questioning, and the established value of the project. During iteration 1, both the assignment scaffold and several soft scaffolds suffered from a diffuseness grounded in the plethora of information. The original assignment sheet included two of the oral history technique articles from one of the soft scaffolds and contained a

detailed timeline that was so specific to the assignment as originally laid out that it left little margin for change.

The second iteration of the assignment sheet relied more on digital content than paper content, and restricted supportive documents to hyperlinks on the page. Second round hard scaffolding eschewed exposition and boiled down the chief actionable activities and deliverables into a handful of active tasks. Hyper-linking was available to support documents that proposed more generalized timeline strategies and were labeled as optional.

Teachers' feedback and students' positive responses to shorter and more precise operational content were evident through the positive changes in student work during the second iteration and the lack of espoused teacher concerns. Second round student work had a more common structure with more consistent elements and process-oriented reflections that were shaped by the hard scaffolding-- as these changes in structure were only addressed in-detail online.

Soft scaffolds. Using screen images and step-by-step directions supported most student participants in completing the broad technology tasks of downloading their recorded interviews, uploading the content to online locations, and embedding links and comments around their work. Teachers were fascinated that a YouTube style video could be used to support students through some of these tasks. This use of additional live action and demonstration videos emerged as an enhancement strategy to offer varied ways of mentoring participants through the technical challenges. This approach also provides a bridge to reach the participant teachers' concern that they needed more direct mentoring in the technology to push students past their own real and imagined glitches.

The participant teachers also noted the incredibly strong reactions which students had to initial documentation in the scaffolding that framed a range of platforms, including some popular to students in their own personal time. Students' expressed resistance to mixing what they framed as the personal and academic inspired the teacher participants to wonder if these kind of curricular ventures could ever bridge that gap. Final version changes in the curriculum took up this challenge by returning a third platform to the Voices of Representation Curriculum by engaging students to pick any one social media they employ and share aspects of their Wikispaces content through that medium. It is anticipated that this element of choosing your own approach at the school level may yield future success in addressing the social and emotional concerns of students. It gives them the control and choice with platforms and user accounts, which they specifically asked for during a class session that was observed by the researcher.

Although the technology scaffolds were experienced by students and teachers in ways that allowed them to function as a sole-source for how to work, several of the scaffolds on contextual analysis, source analysis, key summarizing, and robust commenting fell short in the initial iteration. Although many students produced posted comments and writing regarding these other elements, the formats were very free form and the results inconsistent from student to student.

Applying the same organizing standards as with the hard scaffold, later iterations favored succinct operational content related to applying the skill to this content-- rather than trying to teach the full background on the development of the skill on the page. Hyperlinks were used to optional supplemental documents for those students who were interested in further explanation.

The resulting shorter scaffold content offered a more precise set of guiding questions to answer and now were short enough that examples of an appropriate well-written response to the

questions could be offered. Positive affirmations urging students on to the next relevant scaffold to complete all steps of the portfolio writing were added to support the hard scaffold's structuring of activities. The results that appeared in the final student work showcased a depth, breadth, and consistency more aligned with the assignment's goals.

Student comments were both more frequent, more threaded, and more critically engaging around the work. Teachers were so impressed with the depth of digital feedback, that they inquired how curriculum could support students weaving between online and face-to-face commenting.

More time. During the post-research interview, teacher participants kept stressing the impact of time on limiting the full usage and appreciation of good scaffolds by all participants. Although they felt a wide range of students were able to refine their work, they lamented the limits to supporting the scaffold with class time and the quick turn-around that students often experienced as they did the work.

The timeline that emerged in the assignment was built around a roughly 5 to 6 week period for both phases of student work, with content for each phase provided separately. Responding to another teacher feedback during the interview session, the final version of the curriculum provides all the material in a student-facing form at once and organizes the activities as a 9-week process. This time increase was shaped by teachers' reports of the additional time needed by late submitting students and the anticipated time needed due to conduct and analyze a second Activist Interview that was added to the assignment.

Shorter and shorter, clearer and clearer. As detailed above, most of the scaffolds became shorter and less *grey* in terms of the ration of text to white space on the page. When scaffolds became more operational and less detailed, the resulting student work showed a much greater

adherence to format requirements. Clear steps and single best-case exemplars supported students in modeling best practices.

Peer-review in-person and online. One of the most complimented aspects of the curriculum by the teacher participants was its focus on creating a peer-review of research by requiring comment posts and responses on each other's pages. As teachers tried to fit this strategy into their thinking about future classes, they also voiced a question about whether students can be encouraged to have multiple face-to-face and online commenting opportunities.

As a result, the final version of the curriculum requires students to post reflections on face-to-face check-ins. Three temporal checkpoints are described to students, along with a brief strategy for the work-share and the format with which they should summarize their takeaways from the peer editing. This also fits with the more process-oriented supports that were refined in the scaffolds during iteration two.

A range of support documentation. The Voices of Representation Curriculum provided students a range of formats to receive support and feedback. Students and teachers alike worked in an online environment and had the ability to edit all files. Screen images and step-by-step directions on select processes built capacity and expertise in participants. A brief video how to explained some key things for students to look out for in the digitizing procedure. Student and teacher success with applying the range of multimodal resources informed and encouraged additional support documentation in the final version of the curriculum.

Moving Forward

Chapter 1 focused on the challenges of connecting pedagogy, technology, and classroom content knowledge in a way that activates student-led inquiry and increased civic participation. The critique it offered of WebQuests and other past popular educational technology efforts was

the degree to which they flattened authentic teacher and student exploration. Prefabricated approaches of the past have tended to flatten technologies to a format that can be assured to work during a single class period, or if the building's network goes down. Few of these techniques has embraced the range of social media and portable devices which are well-documented as commonplace for millennials and adolescents.

Instead of trying to write in an easy to handle set of lessons, the Voices of Representation Curriculum goes the other direction and seeks to provide teachers and students an anchor as they engage in the messy work of problem-based learning. The curriculum supports the classroom extending beyond the school's doors, by giving high school students the authentic mission to conduct oral history interviews first with their friends and family, and then to tangentially known community members. The curriculum pulls on students to use their cell phones, portable devices, or nearby desktop computers to capture their interview work and share it online. The curriculum supports them in developing skills that exist in the Common Core State Standards. In addition, the VORC engages students to activate agency and modification their involvement in the classroom to the highly effective standards of the Danielson Framework for teacher evaluation and development tools as it is currently understood to advance professional teacher practice conversations (Danielson, 2015 April 1). The VORC also recognizes the online new media literacies that social and cultural historians have noted in current generations of adolescents.

The curriculum was developed through a lens of looking for alignment among technology, classroom pedagogy, and content knowledge. Drawing on past research, the Voices of Representation pins its strengths on the approach of offering hard scaffolds and soft scaffolds

that support students in both conceptualizing the project requirements and having direct tutoring in how to complete these elements.

These scaffolds, when explored through design research, illustrated a capacity to coach students through tasks and skill-sets to do several things: to share written and multimedia content in a publically available digital format; to gather and analyze background research in concise ways; to define a primary source using discipline-specific terminology and concepts; to reflect on the nature of arguments that their primary and secondary sources have been made around contemporary issues; to highlight their own chief findings; and to offer constructive digitally shared feedback to each other.

Initial challenges in the process of refining these scaffolds pointed out challenges: the limited time for process, the teens' concerns around the personal versus academic in online life, and the need to prize concise sophisticated writing samples as a collegiate preparatory format. The curriculum was refined through a design-based process that sought to address these participant concerns by evolving the supportive scaffolding. Recognizing the built pedagogy of assignments and rubrics, and the supportive nature of how to handouts, the Voices of Representation Curriculum writes the TPACK alignment into the support documents. As these scaffolds were refined through their research iterations, they became more focused.

The end result is a curriculum that takes the messy process of hands-on learning and provides a manageable way to blend social studies inquiry and technology within a two-month period. The resultant oral history process and online archiving is core to sub-disciplines that are central to social studies and historical studies. The Voices of Representation Curriculum provides teachers and students and meaningful model to make problem-based learning inquiry effective. Students walk out of the process having experienced first-hand the challenges

involved in civic participation-- both because they have moved through the world outside the school searching for primary source content, but also because this content asks community members to reflect on their own civic participatory process.

Students at one public school were moved toward increased levels of civic engagement and communal discourse at a time when their teachers would describe them as being overwhelmed with senior projects and graduation requirements. Despite teacher cynicism at the start of the process, teachers were impressed with the work that the scaffolds helped students extricate.

Moving forward the researcher hopes that more schools will consider the use of the Voices of Representation Curriculum so that they can explore TPACK aligned and culturally relevant technology infusions in the secondary classroom.

Additionally, the researcher is interested in ways through which this primary source interviewing technique can be adapted across content subjects. These initial findings inspire a desire to explore how other secondary subject teachers might engender students' greater connection to communities of practice and discipline-specific critical thinking by engaging outside experts and journey-people as primary sources. Students in such research projects could be engaged with slightly adapted scaffolding to interview scientists about their own experiences with experimentation, linguists with their translating efforts, or mathematicians with their application of modeling to engineering and design.

Educator Paulo Freire argues in *Pedagogy of the Oppressed* that, a problem-posing form of education recognizes that people are in a state of incompleteness in which they are both in the process of *becoming* in development and recognizing themselves as historical beings (P. Freire, 2000). His focus on practicing critical reflection, engaging in public dialogue, and surfacing and

problematizing assumptions, is very much embodied in the efforts of this research. Voices of Representation Curriculum represents an attempt at its heart to put students squarely in control of an investigation that problematizes flattened notions of history by bringing alive their power to engage in a dialogue with non-academic sources about their lived-through experience. In this way the process of being a student and educator become one in the same as high school students document the voices of living history in a durable way that can be shared with others.

Technology and problem posing in a digital space can offer a meaningful link to secondary learners as they learn to connect their subject-specific research and findings with each others in a digital agora.

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APPENDIX A

VOR-SWAR Rubric

Table A1

Rubric (VOR SWAR) Teacher Subjects Used to Analyze Student Work

Standards	Mastery Standards	Standards Present in Honors Level Work	Exceeding Project Standards	Met Project Standards	Needs More Work to Meet Standards (Minimal Pass)	Incomplete Work or Missing Project Standards
Sustained Research to Synthesize an Answer to a Question or Problem (CCSS A)	<ul style="list-style-type: none"> • Work demonstrates a specific and authentic essential question to guide their research • Student research files and annotation is readily available and properly labeled within a digital medium • Digital content clearly connects sources used to the steps of answering the research question. 	<ul style="list-style-type: none"> • Student research focuses on a precise question and readily offers a range of notes from properly labeled sources. • Student sources offer evidence that specifically answers to the research question. 	<ul style="list-style-type: none"> • Student research focuses on a specific question and offers a range of notes from labeled sources. • Student sources offer evidence that directly answers the research question. 	<ul style="list-style-type: none"> • Student research is centered on a research question and uses notes from sources to answer this question. • Student sources offer evidence to answer the research question. 	<ul style="list-style-type: none"> • Student research generally focuses around a research question. Research notes provide some answers to this question. • Student sources offer some evidence relevant to answer the research question. 	<ul style="list-style-type: none"> • Student research does not focus around a research question or is not coherent. • Research notes provide limited or no answers to the research question. • Student sources are tangential or irrelevant to the research question.
Analyzing the Political, Social, or Economic Aspects of History/Social Science (CCSS B)	<ul style="list-style-type: none"> • Digital annotations reflect student's deep understanding of the Social, Political, Economic, Cultural, or Spatial (SPECS) context presented in the research sources • Student digital portfolio offers accurate, succinct, and detailed explanations of SPECS terminology and stakeholders • Writing and speech consistently incorporate proper social science terms/phrases to describe historical and current SPECS background information 	<ul style="list-style-type: none"> • Portfolio contains clear and detailed evidence of students' understanding of the SPECS context, terminology, and stakeholders. • Students consistently use SPECS terms/phrases properly to capture standard social studies/history conventions. 	<ul style="list-style-type: none"> • Portfolio contains detailed evidence of students' understanding of the SPECS context, terminology, and stakeholders. • Students often use SPECS terms/phrases properly to capture standard social studies/history conventions. 	<ul style="list-style-type: none"> • Portfolio contains evidence of students' understanding of the SPECS context, terminology, and stakeholders. • Students use SPECS terms/phrases properly to capture standard social studies/history conventions. 	<ul style="list-style-type: none"> • Portfolio contains limited evidence of students' understanding of the SPECS context, terminology, and stakeholders. • Students occasionally use SPECS terms/phrases properly to capture standard social studies/history conventions. 	<ul style="list-style-type: none"> • Portfolio lacks evidence of students' clear understanding of the SPECS context, terminology, and stakeholders. (Evidence is muddled or missing.) • Students use SPECS terms/phrases improperly to capture standard social studies/history conventions.
Comparing & Contrasting Multiple Primary and Secondary Source Treatments (CCSS C)	<ul style="list-style-type: none"> • Students discern patterns among their cited sources, comparing how these sources present their subject matter • The student-designed media offers a critical and detailed analysis of the research sources, contrasting them for their potential bias. • Students incorporate oral history and first-person narratives by outreaching to additional sources, if possible, to compare and contrast with "written" history 	<ul style="list-style-type: none"> • Students meaningfully compare how sources address their subject matter and clearly analyze sources to contrast bias. • Students include multiple sources from first-person narratives obtained through their outreach efforts. 	<ul style="list-style-type: none"> • Students clearly compare how sources address their subject matter and describe sources to contrast bias. • Students include sources from first-person narratives obtained through their outreach efforts. 	<ul style="list-style-type: none"> • Students compare how sources address their subject matter and include a basic contrast of their sources' bias. • Students include first-person narratives. 	<ul style="list-style-type: none"> • Students compare how sources address their subject matter and suggest bias in sources. • Students have limited or no first-person narratives. 	<ul style="list-style-type: none"> • Students fail to compare their subject matter among sources and are unable to contrast sources' bias. • Students lack primary source narratives.

(continued)

Standards	Mastery Standards	Standards Present in Honors Level Work	Exceeding Project Standards	Met Project Standards	Needs More Work to Meet Standards (Minimal Pass)	Incomplete Work or Missing Project Standards
Developing Discipline Appropriate Claims and Counter Claims with Appropriate/Applicable Use of Formatting, Graphics, and Multimedia (CCSS D)	<ul style="list-style-type: none"> The digital portfolio presents a cohesive analysis with a overall thesis or thematic comprised of specific arguments. The digital portfolio presents an evidence-based counter-argument that it effectively dismisses. Formatting, graphics, and multimedia are incorporated in a way that clarifies and strengthens the logical social studies arguments. 	<ul style="list-style-type: none"> The portfolio captures a detailed thesis or theme grounded deeply in arguments and assertions. The student clearly captures grounded counter-arguments and effectively dismisses them. Formatting, graphics, and multimedia deeply enhances the arguments. 	<ul style="list-style-type: none"> The portfolio captures a clear thesis or theme grounded deeply in arguments and assertions. The student captures grounded counter-arguments and effectively dismisses them. Formatting, graphics, and multimedia enhance the arguments. 	<ul style="list-style-type: none"> The portfolio captures a thesis or theme grounded in arguments and assertions. The student includes evidence-based counter-arguments and dismisses them. Formatting, graphics, and multimedia assist the arguments. 	<ul style="list-style-type: none"> The portfolio includes a discernable thesis or theme and specific arguments or assertions. The student captures a counter-argument and includes a response. Formatting, graphics, and multimedia do not distract from the arguments. 	<ul style="list-style-type: none"> The portfolio lacks a discernable theme or specific arguments and assertions. The student lacks a counter-argument or does not clearly respond to contrary evidence. Formatting, graphics, and multimedia distract from the arguments.
Write Informative/Explanatory Texts Capturing Historical, Scientific, or Technical Processes with Appropriate/Applicable Use of Formatting, Graphics, and Multimedia (CCSS E)	<ul style="list-style-type: none"> Students digitally highlight or note (annotate) source materials to showcase the SPECS evidence they contain. Students create original charts, tables, graphics, or other visual representations to explain or facilitate major SPECS themes they have discovered in the research. Students find, interpret, and correctly analyze charts, graphs, data, and multimedia from their source materials. 	<ul style="list-style-type: none"> Students meaningfully extract SPECS evidence from their sources through clear digital notes Students include a range of charts, tables, and graphics among the sources they analyze AND the graphic organizers they create to capture the evidence. 	<ul style="list-style-type: none"> Students clearly extract SPECS evidence from their sources through clear digital notes Students include a number of charts, tables, and graphics among the sources they analyze AND the graphic organizers they create to capture the evidence. 	<ul style="list-style-type: none"> Students extract/summarize SPECS evidence from their sources through clear digital notes Students include some charts, tables, and graphics among the sources they analyze and/or the graphic organizers they create to capture the evidence. 	<ul style="list-style-type: none"> Students repeat/ note SPECS evidence from their sources through clear digital notes Students include a chart, tables, or graphic among the sources they analyze or include them as graphic organizers they create to capture the evidence. 	<ul style="list-style-type: none"> Students fail to note SPECS evidence from their sources through clear digital notes Students do not include a chart, table, or graphic among their sources or as a graphic organizer tool.
Using technology and the Internet to Dynamically Produce, Publish, Share and Display Information (CCSS F)	<ul style="list-style-type: none"> Students create a running record of their research process through online posts/tools. Students use hyper-linking and web 2.0/3.0 to create a clear, organized portfolio of their research sources Social media is used to succinctly summarize the central themes/big ideas of the research 	<ul style="list-style-type: none"> Students develop a well-organized digital portfolio capturing their sources and an ongoing record of their research process. Students clearly capture and share both the big ideas and steps of their research process through social media and digital posts. 	<ul style="list-style-type: none"> Students develop an organized digital portfolio capturing their sources and clear record of their research process. Students capture and share both the big ideas and steps of their research process through social media and digital posts. 	<ul style="list-style-type: none"> Students develop a digital portfolio capturing their sources and a record of their research process. Students clearly capture and share the big ideas or important steps of their research process through social media and digital posts. 	<ul style="list-style-type: none"> Students develop a digital portfolio noting most of their sources and pivotal moments in their research process. Students capture some big ideas or steps of their research process through social media and digital posts. 	<ul style="list-style-type: none"> Students lack or develop a weak digital portfolio missing key sources or lacking a record of their research process. Students do not capture big ideas or steps of their research process through social media and digital posts

(continued)

Standards	Mastery Standards	Standards Present in Honors Level Work	Exceeding Project Standards	Met Project Standards	Needs More Work to Meet Standards (Minimal Pass)	Incomplete Work or Missing Project Standards
Gathering Relevant Authoritative Print and Digital Sources Effectively, Assessing their Usefulness, and Integrating without Plagiarizing (CCSS G)	<ul style="list-style-type: none"> Students capture evidence of sustained research by detailing the challenges and successes they experienced while locating usable sources. Works cited or portfolio content itself represents information from a range of print and digital materials located over a sustained period of inquiry Students consistently balance paraphrased content and directly quoted content drawn from meaningful sources. 	<ul style="list-style-type: none"> Students capture the precise usefulness of their sources in a clear manner. Students show a very wide range of sources and effectively paraphrase and quote. Sources are very well chosen. 	<ul style="list-style-type: none"> Students capture the relative value of their sources. Students have a wide range of sources and somewhat effectively paraphrase and use direct quotes. Sources are very strong. 	<ul style="list-style-type: none"> Students capture a basic sense of their sources. Students have a range of sources and paraphrase and use direct quotes. Sources are solid. 	<ul style="list-style-type: none"> Students are only moderately able to explain how given sources were useful. Students have only a few sources and use primarily direct quotes with weak paraphrasing. Sources are reasonable. 	<ul style="list-style-type: none"> Students lack a clear breakdown of their sources. Students lack paraphrasing and have minimal direct quotations. Sources are specious.
Collective Intelligence (MacArthur WP/Jenkins A)	<ul style="list-style-type: none"> Students participate in online collaboration through Web-based digital tools, obtaining feedback from teachers and classmates Students share questions and feedback through online tools providing and receiving support with their peers Students use resources suggested by students in other classes or schools/school levels Students incorporate “expert” knowledge from social studies online projects 	<ul style="list-style-type: none"> Students are very active participants in using digital tools to obtain feedback from classmates and other peers. Students document meaningful contributions of feedback and its impact on their research process. Students cite a range of expert knowledge they have incorporated from social studies knowledge communities on the web. 	<ul style="list-style-type: none"> Students are relatively active participants in using digital tools to obtain feedback from classmates and other peers. Students document clear contributions of feedback and its impact on their research process. Students cite several examples of expert knowledge they have incorporated from social studies knowledge communities on the web. 	<ul style="list-style-type: none"> Students are active participants in using digital tools to obtain feedback from classmates and other peers. Students document contributions of feedback and its impact on their research process. Students cite expert knowledge they have incorporated from social studies knowledge communities on the web. 	<ul style="list-style-type: none"> Students use digital tools to obtain feedback from classmates and other peers. Students can minimally evidence contributions of feedback that made them reflect. Students incorporate expert knowledge from social studies knowledge communities on the web. 	<ul style="list-style-type: none"> Students lack or demonstrate only a passive involvement with using digital tools to obtain feedback from classmates and other peers Students lack online feedback that informed their research process. Students lack or fail to integrate expert knowledge from social studies knowledge communities on the web

(continued)

Standards	Mastery Standards	Standards Present in Honors Level Work	Exceeding Project Standards	Met Project Standards	Needs More Work to Meet Standards (Minimal Pass)	Incomplete Work or Missing Project Standards
Transmedia Navigation (MacArthur WP/Jenkins B)	<ul style="list-style-type: none"> Students use multimedia to capture their evidence in a story narrated across mediums Students place messages in the medium where they fit best—recognizing the strengths (affordances) of a given medium. Students effectively convey a cohesive set of big ideas, a theme, or an overarching thesis argument throughout their portfolio. 	<ul style="list-style-type: none"> Students define a clear story that captures the breadth of their research through multiple media. Students carefully select the right medium for each portion of their message. Students portfolio presents a cohesive set of big ideas, theses, and themes that are defined consistently and clearly across multiple media. 	<ul style="list-style-type: none"> Students define a story that captures a wide range of their research through multiple media. Students select the right medium for each portion of their message. Students portfolio presents a very clear set of big ideas, theses, and themes that are well defined across multiple media. 	<ul style="list-style-type: none"> Students define a story that captures a range of their research through multiple media. Students select the right medium for many portions of their message. Students portfolio presents a clear set of big ideas, theses, and themes that are defined across multiple media. 	<ul style="list-style-type: none"> Students define a story that captures their research through multiple media. Students select the right medium for some portions of their message. Students portfolio presents some big ideas and themes in multiple media. 	<ul style="list-style-type: none"> Students attempt to define a story that captures their research through multiple media. Students do not select the right medium for their messages. Students portfolio is disjointed and limited in use of media choices.
Networking (MacArthur WP/Jenkins C)	<ul style="list-style-type: none"> Students employ advanced research strategies (databases, specialized sites, etc.) that extend beyond ubiquitous search engines for basic searches. Students exhibit their work for feedback from students, parents, and outside educators using digital media Students incorporate feedback and responses from people beyond their classroom in their production of the portfolio Students engage in increased external civic participation through their collection and exhibition of digital content—extending their work beyond their individual classroom 	<ul style="list-style-type: none"> Students independently use a range of advanced search techniques bringing online databases, library web sites, and specialty sources into their portfolio. Students select and exhibit multiple digital items from their portfolio and gather a range of feedback to improve their projects. Students communicate with a range of people beyond their class section using online tools. 	<ul style="list-style-type: none"> Students independently use multiple advanced search techniques bringing online databases, library web sites, and specialty sources into their portfolio. Students select and exhibit an entire digital piece from their portfolio and gather multiple people's feedback to improve their projects. Students communicate with multiple people beyond their class section using online tools. 	<ul style="list-style-type: none"> Students independently use an advanced search technique involving an online database, a library web site, or a specialty sources in their portfolio. Students select and exhibit digital content from their portfolio and gather several pieces of feedback from one or more people to improve their projects. Students communicate with a people beyond their class section using online tools. 	<ul style="list-style-type: none"> Students working with another person or independently, use an advanced search techniques involving an online database, a library web site, or a specialty sources in their portfolio. Students are guided to exhibit digital content from their portfolio and gather feedback to improve their projects. Students communicate with a person not in their class section using online tools. 	<ul style="list-style-type: none"> Students use only a ubiquitous search tool like Google to do their research and lack any demonstration of effort to use specialty sources, research databases, or library sites. Students do not exhibit digital content from their portfolio online or do not do so long enough to get feedback on improving their projects. Students do not communicate with any people beyond their class section to share feedback on their project using online tools.

(continued)

Student #:		
Rubric Totals	Category	Grade
	CCSS A Category: Sustained Research	
	CCSS B Category: Analyzing Socio-Political	
	CCSS C Category: Comparing/Contrasting Sources	
	CCSS D Category: Discipline Appropriate Claims/Formats	
	CCSS E Category: Informative/Explanatory Texts with Formatting	
	CCSS F Category: Technology to Dynamically Publish	
	CCSS G Category: Gathering Authoritative Sources without Plagiarizing	
	MacArthur WP /Jenkins A: Collective Intelligence	
	MacArthur WP /Jenkins B: Transmedia Navigation	
	MacArthur WP /Jenkins C: Networking	
	Overall Evaluation:	

APPENDIX B

Excerpts from the Scaffolds Wiki

oralhistoryinterviews

Analyze your Sources

MrBrettSchneider Jan 11, 2015

Highlight Changes Deleted, Inserted View WikiText Q Review Changes Revert to This Version

Older Version Newer Version

Some Approaches to Analyzing Sources

Consider using some of the following models for analyzing your materials. Each model offers intellectual questions you can answer. Put the answers on your Personal Wiki Page.

Part of this project involves critically analyzing the multiple sources you've gathered—primary, secondary, and tertiary—to help answer the questions you had going into the original investigation of your commonly-known event study.

According to the UCD, Adapted from the University of California @ Davis History Project, the following are good strategies, best practices for us to use during THE PROCESS OF HISTORICAL INVESTIGATION after you've done the Research based on your efforts to Create an Investigative Question and Seek Information from Primary and Secondary Sources, Sources.

Pick from this list and answer some of these questions as you reflect on each of your sources individually:

STEPS 1-4: ANALYZING AN INDIVIDUAL SOURCE:

- 1. LITERAL SOURCE QUESTIONING-** What are the literal aspects of the document?
 - What type of document is this? (poetry, diary, government document)
 - What is the setting? (time and place)
 - Who wrote the document? Did the recorder have firsthand knowledge of the event? Or, did the recorder report what others saw and heard?
 - Was the information recorded during the event, immediately after the event, or after some lapse of time?
 - What is the document generally about?
- 2. LOOKING FOR POINT OF VIEW & PERSPECTIVE-** What is the point of view of the source?
 - What religion, sex, and social class is the author?
 - What is the author's social position?
 - What "loaded" words or strong descriptive words are used? (clues to perspective)
 - What is the intent of the author?
 - How might the author be biased?
 - What is omitted?
 - Overall: What perspective or point of view on the topic is presented
- 3. LOOKING AT THE CONTEXT-** How did historical circumstances shape the source?
 - Who is the intended audience?
 - What else is going on at this time that might have affected this source's content?
 - What ideas were present in the predominant culture of the time?
 - How might the context (previous questions in this step) have affected the content of the source?
- 4. ASSESSING THE SIGNIFICANCE OF A SOURCE-** What can be learned from this

STEP 5. ANALYZING MULTIPLE SOURCES

- 5. CORROBORATION-** How do different pieces of evidence compare?
 - Are there other sources to support this source?
 - Are there sources that disagree with this source? Why?
 - What's the same? What's different?
 - What are the reasons for the similarities and differences?
 - Do sources acknowledge counter evidence?
 - Was anything omitted?

Part C:
Making an Interpretation

- 1. Construct an Explanation about History**
 - Which sources will I choose to help me with my topic or leading question? Why?
 - How many pieces of evidence do I need?
 - How will I create an answer to my question that incorporates and accounts for conflicting evidence?
- 2. Seek Peer Review**
 - Is my explanation convincing?
 - Does my explanation have support from several pieces of evidence?
 - Does my explanation reflect the multiple perspectives of the event or era?
 - Is my explanation clearly written or demonstrated in my final product?

Figure B1. Screenshot from iteration 1: *Analyze your Sources* wiki page.

oralhistoryinterviews

Analyze your Sources

A 2 Question Guide to Analyzing Your Sources

Part of this project involves critically analyzing the multiple sources you've gathered-- primary, secondary, and tertiary-- to help answer the questions you had going into the original investigation of your commonly-known event study.

Your one-paragraph answers should be "short but sophisticated" with their own thought-provoking statement.

Please put the answers to these questions on your Personal Wiki Page to Analyze Your Sources.

Adapted from the University of California @ Davis History Project, the following are best practices for us to use during THE PROCESS OF HISTORICAL INVESTIGATION after you've done the Research based on your efforts to Create an Investigative Question and Seek Information from Primary and Secondary Sources.

Answer both of these questions in a full paragraph on your Personal Wiki Page under a section called "Reflection on your Sources":

- 1) CORROBORATING A HISTORICAL EXPLANATION THROUGH MULTIPLE SOURCES-**
How were the 3 oral histories similar to your research articles in terms of the details on which they agree? What is a compelling historical argument that you can make given these common findings?
- 2) COUNTERARGUMENT-**
Comparing and contrasting your sources (the interviewees and the articles)-- what alternate theories could explain the details your interviewees omitted (left out) or on which they disagreed?

SOME OTHER SOURCES ON ANALYZING SOURCING:

Document Analysis model from the National Archives- <http://www.archives.gov/education/lessons/worksheets/document.html> #

A Step by Step on Analyzing Primary Sources (Wikihow)-- <http://www.wikihow.com/Analyze-a-Primary-Source> #

Figure B2. Screenshot from iteration 1.5: *Analyze your Sources* wiki page.

oralhistoryinterviews

Reflecting On Your Sources' Agreement

To provide sophisticated short but sweet analysis for your sources, we need you to **write out the answers to four (4) questions** in the form of traditional paragraph:

- How do my sources agree?
- Do my sources support an "historical argument?"
- Are there things in the interview that people can say offer an "alternative historical interpretation?"
- Do I find anything in the interview or resources that address and dismiss this alternative argument?

Using the same example from the SPECS Context page, below is a sample of the writing that you might do to make all of your research resources and the interview "speak" to each other:

When I interviewed Person X regarding the East Village "squatting" scene, they shared their belief that the city government has never fully supported the "squatter culture" and has always been against empowering individual people rather than big business. Person X gave evidence of legal battles for ownership, which I also found detailed in one of my source articles described above in the context section. Many of the articles I found in my research talk about the ways that developers or investors slowly changed the neighborhood from one of low-rent buildings and "squats" to high-priced condos, co-ops, and luxury rentals. Most sources agree that there has been a powerful change in the community culture. Person X agreed with other sources that the artistic and young independent adventurous people who founded and fought for the squats have given way to a range of rich New York University students, two-income high powered family couples, and foreign investors. The videos and articles available on the subject showcase the differences in the atmosphere of the community-- with a notable blog still documenting the ongoing changes of the atmosphere-- [EY Goings](#).

This conflict and the agreement of all sources on the changes, lend toward a historical argument being made that "New York City government has allowed for the gentrification of the East Village to the point that the old squatter and artist culture has been lost."

Some of the resources, including Person X's comments might lend to an "alternative historical interpretation" which I'll call the "aging out theory." This suggests that it was not simply city government's response to the neighborhood and squatters but the squatters getting older and having children that may or may not have wanted to stay and maintain the lifestyle and environment. Several articles suggest that people of the era have moved on to other areas, increased levels of economic success, or are deceased.

I do think that Person X and the article sources answer to this alternative theory and dismiss it, however, as they detail a lot of evidence of New York City government mayors, city council members, and police challenging their rights to own, maintain, or sell the property-- forcing people out or to give up rather than it being of their own choice. I do think Person X's interview strongly supports my initial historical argument.

[You have completed another section-- click here to go back to the assignment page and do your final bids](#)

Figure B3. Screenshot from iteration 2: *Reflecting on Your Sources' Agreement* page.




Figure B4. Screenshot from iteration 1: *Project Expectations* wiki page.

ralhistoryinterviews

Building the Context (SPECS)

Edit 0 7



Putting on your SPECS- (Analyzing the background history)

A few centuries ago, one would more likely hear glasses referred to as "spectacles"—drawing from its Latin roots found in Latin verbs meaning to observe or to look at. Your teachers have introduced you over these last few years to SPECS— Social, Political, Economic, Cultural, Spatial (Geographic). The reason your teachers ask you to speak to these issues when doing work in history or the social sciences is to help clarify context—the background details that provide potential insight into the relationships and dynamics involved in a situation you are describing.

So how do you give context to your one-hour oral history Activist Interview?

When you make the appointment to interview, ask the interviewee for the dates of the events they will talk about and the names of a few major events or people that impacted their story. Look up these people, places, and events through online searching. Read a few articles from different sources— sources like Village Voice, the New York Times, the Daily News, and the New York Post, along with the New Yorker, and New York Magazine to name a few. Watch a TV or web broadcast on the events from youtube or a news site if you can find it.

Write a two-three paragraph context summary of your findings on the page, using a format like the one that follows:

Places: Dates and physical locations where the events are set and a description from the sources of how the location felt, smelled, appeared

Key people and events: what types of people were present? how did they appear and communicate in the press? what kinds of conflicts existed? where there key events over which they disagreed?

Power & Positions: Who was politically in power? What policies, laws, or economic proposals did they have affecting this issue? On behalf of what kinds of laws, policies, or funding was the activist fighting?

A hypothetical sample is below regarding interviewing an Alphabet City activist who you arranged for an interview with and read sources you found on the web using search terms like "New York," "squats," "East Village," "abandoned buildings," and "1980s."

Sample SPECS background context to be included on your Activist Interview Personal Page:

The East Village of New York City had a complex history in the 1970s, 1980s, and early 1990s as seen on the digital archive: <http://ghh.aphdigital.org/exhibits/show/votals/overview>. Many sources describe a neighborhood within the neighborhood called "Loisaida" or "Alphabet City." New York Magazine, describes the art scene and artistic influences on the community in the late 1970s and 1980s, in an article <http://nymag.com/nymetro/arts/features/10657/> that captures the feel of a neighborhood that had cheap rents due to a number of buildings that could vastly be described as "tenement," "abandoned," or "squats." The results of this atmosphere were that individual residents who had claimed buildings and then fought with the City of New York to allow them to gain permanent residence in the buildings based on their "sweat equity." The Villager shares the background on a lot of the battles for locals to obtain and maintain these squats: http://thevillager.com/villager_296formersquats.html.

The casual and makeshift style of the neighborhood in those days is documented both in articles and in videos filmed by then residents <https://www.youtube.com/watch?v=GaFqXltaTks>. And <https://www.youtube.com/watch?v=31gH07CeYR8>. A lot of these spaces and the general atmosphere of the now extremely expensive rents has changed the atmosphere according to two recent New York Times spreads— <http://www.nytimes.com/interactive/2013/10/06/nyregion/album-squatters.html> and <http://www.nytimes.com/2014/12/14/real-estate/the-east-village-clings-to-a-colorful-past.html>. Some people allege that this conflict began city council members and developers allowed the neighborhood to begin being sold and redeveloped for profit in the late 1980s and 1990s. Activists then fought for affordable housing and the right to "homesteading" or squatting of abandoned properties along with fighting the police over the shut down of the neighborhood's Tompkins Square Park as seen on this video: <https://www.youtube.com/watch?v=bunhow5v8j8>.

I will be interviewing Person X, who grew up in these "squats" and will be investigating what they recall about the fights and battles that occurred in this neighborhood.

That's it— it's a lot easier than you might think. Imagine you are a really good reporter who is trying to help their readers know exactly what they've found out while researching the story.

You've completed this portion of the assignment— return to the assignment page for the next section

Figure B5. Screenshot from iteration 2: *Building on your SPECS* wiki page.

APPENDIX C

IRB Approval

PEPPERDINE UNIVERSITY

Graduate & Professional Schools Institutional Review Board

December 22, 2014

Brett Schneider

Protocol #: E0714D05

Project Title: Virtual Civic Engagement: Exploring Technology, Secondary Social Studies, and Problem Based Learning with TPACK

Dear Mr. Schneider:

Thank you for submitting your application, *Virtual Civic Engagement: Exploring Technology, Secondary Social Studies, and Problem Based Learning with TPACK*, for exempt review to Pepperdine University's Graduate and Professional Schools Institutional Review Board (GPS IRB). The IRB appreciates the work you and your faculty advisor, have done on the proposal. The IRB has reviewed your submitted IRB application and all ancillary materials. Upon review, the IRB has determined that the above entitled project meets the requirements for exemption under the federal regulations (45 CFR 46 - <http://www.nihtraining.com/ohsrsite/guidelines/45cfr46.html>) that govern the protections of human subjects. Specifically, section 45 CFR 46.101(b) (2) states:

(b) Unless otherwise required by Department or Agency heads, research activities in which the only involvement of human subjects will be in one or more of the following categories are exempt from this policy:

Category (2) of 45 CFR 46.101, research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: a) Information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and b) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Your research must be conducted according to the proposal that was submitted to the IRB. If changes to the approved protocol occur, a revised protocol must be reviewed and approved by the IRB before implementation. For any proposed changes in your research protocol, please submit a **Request for Modification Form** to the GPS IRB. Because your study falls under exemption, there is no requirement for continuing IRB review of your project. Please be aware that changes to your protocol may prevent the research from qualifying for exemption from 45 CFR 46.101 and require submission of a new IRB application or other materials to the GPS IRB.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite our best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the GPS IRB as soon as possible. We will ask for a complete explanation of the event and your response. Other actions also may be required depending on the nature of the event. Details regarding the timeframe in which adverse events must be reported to the GPS IRB and the appropriate form to be used to report this information can be found in the *Pepperdine University Protection of Human Participants in Research: Policies and Procedures Manual* (see link to “policy material” at <http://www.pepperdine.edu/irb/graduate/>).

Please refer to the protocol number denoted above in all further communication or correspondence related to this approval. Should you have additional questions, please contact Kevin Collins, Manager of the Institutional Review Board (IRB) at gpsirb@pepperdine.edu. On behalf of the GPS IRB, I wish you success in this scholarly pursuit.

Sincerely,



Thema Bryant-Davis, Ph.D.

Chair, Graduate and Professional Schools IRB

cc: Dr. Lee Kats, Vice Provost for Research and Strategic Initiatives

Mr. Brett Leach, Compliance Attorney

Dr. Linda Polin, Faculty Advisor